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City and County of San Francisco
Commission on the Environment

Notice and Agenda
Tuesday, January 25, 2005 at 5:00 p.m.
City Hall Room 416

Commission Members: Nia Crowder, President, Paul Pelosi, Jr., Vice President, Christina Desser, Angelo King, Alan Mok, Arlene Rodriquez, and Johanna Wald.

Commission Secretary: Monica Fish

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AGENDA
Special Meeting Agenda

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

2. **ACTION:** Adoption of Minutes of November 23rd, 2004 Meeting. (Explanatory Document: Minutes of November 23rd, 2004 Meeting)**

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

4. **INFORMATION:** The Department of the Environment's draft budget for fiscal 2005-2006. Deputy Director David Assmann will present the draft budget for fiscal 2005-2006.

5. **ACTION:** Consideration and approval of Resolution No. 001-05-COE "Duke Energy" (Explanatory Document: Duke Energy Resolution 001-05-COE)**

   RESOLUTION APPROVING THE EXPENDITURE OF $100,000 OF THE DUKE ENERGY SETTLEMENT FOR PLANTING AND MAINTAINING A MINIMUM OF 100 NEW TREES IN THE BAY VIEW- HUNTERS POINT NEIGHBORHOOD AS PART OF A MARCH 12, 2005 COMMUNITY ARBOR DAY EVENT.

   Sponsor: Director Jared Blumenfeld
   Staff: Alexis Harte, Department of the Environment, Carla Short, DPW Urban Forestry

6. **ACTION:** Consideration and approval of Resolution No. 007-04-COE "Bag Fee" (Explanatory Document: Resolution No. 007-04-COE Bag Fee)**

   URGING THE MAYOR AND THE BOARD OF SUPERVISORS OF THE CITY AND COUNTY OF SAN FRANCISCO TO ADOPT AN ORDINANCE REQUIRING A FEE ON PLASTIC AND PAPER BAGS.

   Sponsor: Johanna Wald
   Staff: Robert Haley

7. **ACTION:** Consideration and approval of Resolution No. 002-05-COE (Explanatory Documents: Resolution No. 002-05-Coe Revised Reduced-Risk Pesticide List For 2005, Approved Pesticide List for 2005, Pesticides Added, Pesticides Removed and Pesticide Changes)**

   RESOLUTION ADOPTING REVISED REDUCED-RISK PESTICIDE LIST FOR SAN FRANCISCO FOR 2005

   Sponsor: Director Jared Blumenfeld
   Staff: Chris Geiger

8. **INFORMATION:** Update on World Environment Day. Director Jared Blumenfeld will give an update on preparations for World Environment Day.

9. **INFORMATION:** Commission Secretary's Report
   Monica Fish, Commission Secretary
   - Communications & Correspondence
   - Update on Pending City Legislation
   - Commission Policies and Procedures

10. **INFORMATION:** Director's Report

- Jared Blumenfeld, Director, Department of the Environment will give updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division.

11. **INFORMATION:** President's Announcements

12. **INFORMATION: New Business**

13. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

14. **ADJOURNMENT**

** **Please note:** *This email contains only the agendas for the meetings. For complete information on these meetings, including disability access, explanatory documents, Sunshine Ordinance information, lobbyist information and other meeting information, please follow the attached link:* *http://sfgov.org/site/sfenvironment_meeting.asp?id=15506 If you wish to receive complete information for these and other meetings by email, including disability access, explanatory documents, Sunshine Ordinance information, lobbyist information and other meeting information, please respond to this email and put "Complete Notice" in the subject heading.*

Monica Fish
Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

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City and County of San Francisco
Commission on the Environment

DRAFT MINUTES
Tuesday, January 25, 2005 at 5:00 p.m.
City Hall Room 416

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1. **CALL TO ORDER AND ROLL CALL:** The meeting was called to order shortly after 5:00 p.m. Present: Commissioners Nia Crowder, Paul Pelosi, Jr., Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald.

   Commissioner Nia Crowder introduced Monica Fish, Environment Commission Secretary.

2. **ACTION:** Adoption of Minutes of November 23rd, 2004 Commission Meeting.

   There were no comments from the public at this time.

   Upon motion By Commissioner Wald and second by Commissioner Desser, the minutes of the November 23, 2004 Regular Meeting were unanimously adopted.

   AYES: Commissioners Crowder, Pelosi, Jr., Desser, King, Mok, Rodriguez, and Wald

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3. **PUBLIC COMMENT** for items under the Commission's jurisdiction and not on today's agenda.

   There were no comments from the public at this time

8. **INFORMATION:** Update on World Environment Day.

   - Director Jared Blumenfeld gave an update on preparations for World Environment Day to be held in San Francisco from June 1 - 5, 2005.

   - Elisabeth Cox, head of Communications and Special Events for the United Nations Environment Program, Brennan Van Dyke, head of North American Regional Office for the United Nations Environment Program, and Heidi Kuhn, Chair of World Environment Day and Executive Director, Roots of Peace thanked everyone involved and the City of San Francisco for hosting World Environment Day.

   - Public comment from Michelle Leighton, Co-Founder of the Natural Heritage Institute on World Environment Day and the formation of the Burton Center, an organization seeking to raise awareness of globalization and their impact to the environment in cities around the world. Request to present language at the Policy Committee meeting to assure that the World Environment Day Environmental Accords promote the issues of globalization and linkages between human rights environment and labor in San Francisco and other cities around the world.

   - Public comment from Reverend Gregory Richardson, Faith Base Community, Black Pride Enterprise on World Environment Day, working with faith based communities in the San

Francisco Bay Area, and engaging worldwide leaders to engage them in the renewable energies process.

- Public comment from Commander Bob Pon, American Asian legion in San Francisco, on developing programs and awareness between communities.

6. **ACTION:** Consideration and approval of Resolution No. 007-04-COE "Bag Fee" (Explanatory Document: Resolution No. 007-04-COE Bag Fee)**

URGING THE MAYOR AND THE BOARD OF SUPERVISORS OF THE CITY AND COUNTY OF SAN FRANCISCO TO ADOPT AN ORDINANCE REQUIRING A FEE ON PLASTIC AND PAPER BAGS.

Sponsor: Johanna Wald
Staff: Robert Haley

- Supervisor Ross Mirkarimi spoke on a Resolution introduced by the Mayor and Supervisor at the January 11, 2005 Board of Supervisors meeting instructing the Department of the Environment to complete a nexus study to establish the relationship between the use of disposable supermarket shopping bags and various costs to the City, and to determine the legality and appropriateness of a local fee on these bags.

- Director Jared Blumenfeld gave a presentation on the Department of the Environment (DOE) "bag fee" Resolution and explained proposed amendments.

- Commissioner Pelosi proposed amendments to the DOE Resolution to include that the Commission be able to monitor the results of the nexus study before the Policy Committee and the Commission and proposed a Scope Committee to insure that (1) all San Franciscans and their interests are represented and not desperately impacted (2) the 17 cents fee is not excessive; and (3) how community behavior would be changed.

The Commission thanked staff for their work.

Public Comment speaking in support of Resolution

Bob Besso, Recycling Program Manager, Norcal Waste Systems on the fee helping stop the careless disposal of bags that impact the environment as well as recycling and composting programs.

Bob Price, Program Director, International Council for Local Environmental Issues on program reducing green house gas emissions.

Denise D'Anne
Parin Shah
Ceu, Culture Change

Jan Lundberg, Culture Change on raising the fee amount.
Emily Rogers, TEACH Program Director on educating the public

Monica Wilson, Global Anti Incinerator Alliance on preventing waste and making sure this issue is not an undue burden on low-income families.

Todd Sutton, Northern California Recycling Association
Jim Rhoads, Chair, Recycling Committee, Haight Ashbury Neighborhood Council
Buffy Francisco on finding more places to dispose of plastic materials.
Kim Robrbach on educating the public.
Shawn Berry, San Francisco Urban Alliance for Sustainability
Joe McCraw on sustainability and educating the public.
Greg Shiffer, San Francisco concerned citizen on educating the public
Karen Taylor on other nations that are participating in these types of programs
Aaron Israel, Sierra Club
Elizabeth Stamp, Mission District resident
Sue Vaughan
Buffy Francisco on studying more places to dispose of plastic materials.
Nicole Capshaw on educating the public as to where to return bags.
Alice Mosley on plastic adversely affecting health issues
Apryl Owens on public education, awareness and solutions.
Christian Miranda, Intern, National Park Service on gradually incrementing the bag fee.

Melissa Sarenac, San Francisco Resident, on San Francisco Scavenger Company providing every household with three canvas bags.

Joe Mirabile, EcoBridge requesting two amendments to the Resolution requiring only cotton canvas bags and to ban newspapers from using plastic bags.

Bruce Spiegelman, Owner, Western Textile Manufacturing Company, a company manufacturing canvas bags, to consider their industry.

Paul Goettlich, author of an article in the January 24, 2005 Chronicle, on the misunderstanding of the proposed fee as a tax.

Mark Murray, Californians Against Waste, on grocery stores using revenue to provide free reusable bags for consumers on food stamps.

Steven Kreftig, San Francisco League of Conservation Voters on the nexus study fully examining the cost fairness and implementation issues with legal justification, looking beyond grocery stores, and involving other Bay Area municipalities.

Russell Wegner, Vice President of Marketing and Planning, NAT-UR, Inc. on the nexus study looking into compostable grocery bags as an alternative and the proposed fee revenue making that a possibility.

Stephanie Barger, Executive Director, Earth Resource Foundation on looking at marine life and effect on tourism and communities adopting an anti Styrofoam ordinance.

Lisa Gautier, Matter of Trust, on durability of canvas bags, corporations providing free bags for free, and other countries getting involved in this issue.

Jessica Bell, Rainforest Action Network, on public's acceptance of a ten cents tax charged by largest supermarket in Australia.

Steve Bloom, member of Sierra Club Executive Committee and Alameda County Recycling Board, on more communication between commissions.

Public Comment speaking in opposition of Resolution

Sandra Moore regarding negative effect on poor families.

John Nulty regarding negative effect on poor families and Resolution not addressing potential health problems.

Roger Ryan regarding negative effect on people that could not afford the fee and on using a different approach.

Grace Berslen, East Coast resident regarding the grocery store's choice of paper or plastic shopping bags as being detrimental and the negative effect on poor families.

Upon motion by Commissioner King and second by Commissioner Wald, the Resolution with the following amendments was opened for consideration.

- Further Resolved, that the fee not be implemented for a period of six months after the passage of the Ordinance to allow for public education which will ensure the effective implementation of the program.

- Further Resolved, that a Scope Committee be formed to insure the success and completeness of the nexus study and report back to the Commission at the next Commission meeting.

The Commission voted 7-0 to adopt the Resolution with Amendments.

AYES: Commissioners Crowder, Pelosi Jr., Desser, King, Mok, Rodriguez, and Wald.

The meeting recessed at 7:05 p.m. and reconvened at 7:15 p.m.

5. **ACTION:** Consideration and approval of Resolution No. 001-05-COE "Duke Energy" (Explanatory Document: Duke Energy Resolution 001-05-COE)**

RESOLUTION APPROVING THE EXPENDITURE OF $100,000 OF THE DUKE ENERGY SETTLEMENT FOR PLANTING AND MAINTAINING A MINIMUM OF 100 NEW TREES IN THE BAY VIEW- HUNTERS POINT NEIGHBORHOOD AS PART OF A MARCH 12, 2005 COMMUNITY ARBOR DAY EVENT.

Sponsor: Director Jared Blumenfeld

Staff: Alexis Harte, Department of the Environment, Carla Short, DPW Urban Forestry

Motion unanimously adopted to continue this item to a Special February Commission meeting/retreat or to the next Policy Committee meeting on February 24, 2005.

There were no comments from the public at this time.

7. **ACTION:** Consideration and approval of Resolution No. 002-05-COE (Explanatory Documents: Resolution No. 002-05-Coe Revised Reduced-Risk Pesticide List For 2005, Approved Pesticide List for 2005, Pesticides Added, Pesticides Removed and Pesticide Changes)**

RESOLUTION ADOPTING REVISED REDUCED-RISK PESTICIDE LIST FOR SAN FRANCISCO FOR 2005

Sponsor: Director Jared Blumenfeld
Staff: Chris Geiger

- Chris Geiger, Staff, gave an overview of what is involved in producing the Revised and Approved Reduced-Risk Pesticide Lists and the pesticides that should be added, removed, or changed from the list.

- Jared Blumenfeld, Director, explained that the City regulates pesticides only on City lands. The Commission and Director engaged in a discussion of how the list could be advertised to businesses in the City as an education and outreach campaign and how it can be integrated into the Precautionary Purchasing Order.

There were no comments from the public at this time.

The Commission and Director thanked Chris Geiger for his work on this issue.

Upon Motion by Commissioner Wald and second by Commissioner Desser the Resolution adopting the Revised Reduced-Risk Pesticide List For San Francisco for 2005 was approved unanimously.

The Commission voted 7-0 to adopt the Resolution.
AYES: Commissioners Crowder, Pelosi Jr., Desser, King, Mok, Rodriguez, and Wald.

4. **INFORMATION:** The Department of the Environment's draft budget for fiscal year 2005-2006.

- Deputy Director David Assmann presented the draft budget for fiscal year 2005-2006. The Commissioners and Director Blumenfeld held a discussion on the impact of budget cuts and the budget process. Director Blumenfeld recommended having a communication strategy between Commissioners and Board of Supervisors on the budget.

There were no comments from the public at this time.

9. **INFORMATION:** Commission Secretary's Report
Monica Fish, Commission Secretary
   - Communications & Correspondence
   - Update on Pending City Legislation
   - Commission Policies and Procedures

There was no report given at this time.

10. **INFORMATION:** Director's Report

- Jared Blumenfeld, Director, Department of the Environment gave updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division.

There were no comments from the public at this time.

11. **INFORMATION:** President's Announcements

    - President Crowder requested that the Commission Secretary email a request to the Commissioners to send their availability for the next Commission meeting/retreat for February or March.

    - Jared Blumenfeld, Director announced that the School Board was having an informational meeting on having the School District re-bid their contract to include all new technologies that avoid tail pipe emissions for school buses. The Commission engaged in a discussion on identifying future issues coming before the Commission and sketching out a strategy for dealing with the issues.

    There were no comments from the public at this time.

12. **INFORMATION: New Business**

    There was no new business reported.

    There were no comments from the public at this time.

13. **PUBLIC COMMENTS** on matters that are within the Commission's jurisdiction and are not on today's agenda.

    There were no comments from the public at this time.

14. **ADJOURNMENT:** The meeting adjourned at 7:55 p.m.

Respectfully submitted by:

Monica Fish, Commission Secretary

City and County of San Francisco
Commission on the Environment

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APPROVED MINUTES

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   Commissioner Nia Crowder introduced Monica Fish, Environment Commission Secretary.

2. **ACTION:** Adoption of Minutes of November 23rd, 2004 Commission Meeting.

   There were no comments from the public at this time.

   Upon motion By Commissioner Wald and second by Commissioner Desser, the minutes of the November 23, 2004 Regular Meeting were unanimously adopted.

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approved

   AYES: Commissioners Crowder, Pelosi, Jr., Desser, King, Mok, Rodriguez, and Wald

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Staff: Robert Haley

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- Further Resolved, that the fee not be implemented for a period of six months after the passage of the Ordinance to allow for public education which will ensure the effective implementation of the program.
- Further Resolved, that a Scope Committee be formed to insure the success and completeness of the nexus study and report back to the Commission at the next Commission meeting.

The Commission voted 7-0 to adopt the Resolution with Amendments.

AYES: Commissioners Crowder, Pelosi Jr., Desser, King, Mok, Rodriguez, and Wald.

The meeting recessed at 7:05 p.m. and reconvened at 7:15 p.m.

5. **ACTION:** Consideration and approval of Resolution No. 001-05-COE "Duke Energy" (Explanatory Document: Duke Energy Resolution 001-05-COE)**

RESOLUTION APPROVING THE EXPENDITURE OF $100,000 OF THE DUKE ENERGY SETTLEMENT FOR PLANTING AND MAINTAINING A MINIMUM OF 100 NEW TREES IN THE BAY VIEW- HUNTERS POINT NEIGHBORHOOD AS PART OF A MARCH 12, 2005 COMMUNITY ARBOR DAY EVENT.

Sponsor: Director Jared Blumenfeld

Staff: Alexis Harte, Department of the Environment, Carla Short, DPW Urban Forestry

Motion unanimously adopted to continue this item to a Special February Commission meeting/retreat or to the next Policy Committee meeting on February 24, 2005.

There were no comments from the public at this time.

7. **ACTION:** Consideration and approval of Resolution No. 002-05-COE (Explanatory Documents: Resolution No. 002-05-Coe Revised Reduced-Risk Pesticide List For 2005, Approved Pesticide List for 2005, Pesticides Added, Pesticides Removed and Pesticide Changes)**

RESOLUTION ADOPTING REVISED REDUCED-RISK PESTICIDE LIST FOR SAN FRANCISCO FOR 2005

Sponsor: Director Jared Blumenfeld
Staff: Chris Geiger

- Chris Geiger, Staff, gave an overview of what is involved in producing the Revised and Approved Reduced-Risk Pesticide Lists and the pesticides that should be added, removed, or changed from the list.

- Jared Blumenfeld, Director, explained that the City regulates pesticides only on City lands. The Commission and Director engaged in a discussion of how the list could be advertised to businesses in the City as an education and outreach campaign and how it can be integrated into the Precautionary Purchasing Order.

There were no comments from the public at this time.

The Commission and Director thanked Chris Geiger for his work on this issue.

Upon Motion by Commissioner Wald and second by Commissioner Desser the Resolution adopting the Revised Reduced-Risk Pesticide List For San Francisco for 2005 was approved unanimously.

The Commission voted 7-0 to adopt the Resolution.
AYES: Commissioners Crowder, Pelosi Jr., Desser, King, Mok, Rodriguez, and Wald.

4. **INFORMATION:** The Department of the Environment's draft budget for fiscal year 2005-2006.

- Deputy Director David Assmann presented the draft budget for fiscal year 2005-2006. The Commissioners and Director Blumenfeld held a discussion on the impact of budget cuts and the budget process. Director Blumenfeld recommended having a communication strategy between Commissioners and Board of Supervisors on the budget.

There were no comments from the public at this time.

9. **INFORMATION:** Commission Secretary's Report
Monica Fish, Commission Secretary

- Communications & Correspondence
- Update on Pending City Legislation
- Commission Policies and Procedures

There was no report given at this time.

10. **INFORMATION:** Director's Report

- Jared Blumenfeld, Director, Department of the Environment gave updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division.

There were no comments from the public at this time.

11. **INFORMATION:** President's Announcements

- President Crowder requested that the Commission Secretary email a request to the Commissioners to send their availability for the next Commission meeting/retreat for February or March.
- Jared Blumenfeld, Director announced that the School Board was having an informational meeting on having the School District re-bid their contract to include all new technologies that avoid tail pipe emissions for school buses. The Commission engaged in a discussion on identifying future issues coming before the Commission and sketching out a strategy for dealing with the issues.

There were no comments from the public at this time.

12. **INFORMATION: New Business**

There was no new business reported.

There were no comments from the public at this time.

13. **PUBLIC COMMENTS** on matters that are within the Commission's jurisdiction and are not on today's agenda.

There were no comments from the public at this time.

14. **ADJOURNMENT:** The meeting adjourned at 7:55 p.m.

Respectfully submitted by:

Monica Fish, Commission Secretary

Approved: February 24, 2005

FILE NO. 2005-01 RESOLUTION NO. 001-05-COE

Resolution Duke Energy Settlement

Resolution approving the expenditure of $250,000 of the Duke Energy Settlement for planting and maintaining trees in the Bayview, Potrero Hill, and Visitacion Valley neighborhoods of San Francisco.

WHEREAS, The San Francisco Board of Supervisors and Mayor have settled the lawsuit filed by the City and County of San Francisco, on behalf of the People of California, against the Duke Energy Companies (see attached); and

WHEREAS, $250,000 of the $ 207.5 Million settlement is allotted for purchase, siting, planting, and long term maintenance of trees in areas of San Francisco affected by electric generation; and

WHEREAS, The Department of the Environment and the Department of Public Works must work together to develop and implement the $ 250,000 planting program; and

WHEREAS, The Department of the Environment and the Department of Public Works have sought, and continue to seek, public input in the development and implementation of this program; and

WHEREAS, the Bayview-Hunters Point, Potrero Hill, and Visitacion Valley neighborhoods are affected by electric power generation; and

WHEREAS, The Department of the Environment and the Department of Public Works have jointly developed a plan to plant and maintain approximately 240 new trees in a single community-based tree-planting event in the Bayview-Hunters Point neighborhood on March 12, 2005 as part of Arbor Week festivities; and to additionally plant and maintain approximately 528 new trees by December 3rd 2005 in the Bayview-Hunters Point, Potrero Hill, and Visitacion Valley neighborhood; and therefore, be it

RESOLVED, That the Commission on the Environment approves the expenditure of $250,000 of the Duke Energy Settlement for planting and maintaining trees in the Bayview, Potrero Hill, and Visitacion Valley neighborhoods of San Francisco in accordance with the plan and this Resolution.

I hereby certify that this resolution was adopted by the Commission on the Environment at its special meeting on February 24, 2005.

Monica Fish

Commission Secretary

VOTE:

Ayes: Commissioners Nia Crowder, Christina Desser, Alan Mok, and Johanna Wald

Noes: None

Absent: Commissioners Angelo King, Paul Pelosi, Jr., and Arlene Rodriguez

City and County of San Francisco
Commission on the Environment

Notice and Special Meeting Agenda
Thursday, February 24, 2005 at 4:00 p.m.
City Hall, Room 421

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Commission Members: Nia Crowder, President, Paul Pelosi, Jr., Vice President, Christina Desser, Angelo King, Alan Mok, Arlene Rodriquez, and Johanna Wald.

Commission Secretary: Monica Fish

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ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

2. **ACTION:** Consideration and approval of Resolution No. 001-05-COE "Urban Forestry Duke Energy Settlement" (Explanatory Document: Urban Forestry Duke Energy Settlement Resolution 001-05-COE (Word) and Duke Energy Settlement Joint Proposal of San Francisco Department of Public Works and San Francisco Department of the Environment (Word))**

   RESOLUTION APPROVING THE EXPENDITURE OF $250,000 OF THE DUKE ENERGY SETTLEMENT FOR PLANTING AND MAINTAINING TREES IN THE BAY VIEW, POTRERO HILL, AND VISITACTION VALLEY NEIGHBORHOODS OF SAN FRANCISCO.

   Sponsor: Director Jared Blumenfeld

   Staff: Alexis Harte, Department of the Environment, Carla Short, DPW Urban Forestry

3. **ACTION:** Adoption of Minutes of the January 25, 2005 Meeting. (Explanatory Document: Draft Minutes of the January 25, 2005 Meeting)**

4. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

5. **DISCUSSION:** Discussion on selecting dates, topics and other relevant items for the Commission on the Environment Retreat.

6. **INFORMATION:** Commission Secretary's Report
   Monica Fish, Commission Secretary
   1. Communications & Correspondence

      - Annual Sunshine and Ethics Training Monday, March 7, 2005
      - Statement of Economic Interests (Form 700) and Sunshine Ordinance Declaration
      - Life Safety Compliance at City Hall Meetings
      - Commissioner Parking during Commission Meetings

   2. Update on Pending City Legislation

- Board of Supervisors Resolution on Local Shopping Bag Fee Nexus Study

7. **INFORMATION:** President's Announcements

8. **INFORMATION:** New Business

9. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

10. **ADJOURNMENT**

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506, (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org within three business days of a meeting.*

Disability Access

The Commission on the Environment meetings are generally held in the Civic Center area. Please see the agenda for exact meeting location. The Commission meeting rooms are wheelchair accessible. The closest accessible BART station is the Civic Center Station at United Nations Plaza and Market Street. Accessible MUNI lines serving this location are: #71 Haight/Noriega and the F Line to Market and Van Ness and the Metro Stations at Van Ness and Market and at Civic Center. For information about MUNI accessible services call (415) 923-6142. There is accessible curbside parking adjacent to City Hall on Grove Street and Van Ness Avenue and in the vicinity of the Veterans Building at 401 Van Ness Avenue adjacent to Davies Hall and the War Memorial Complex.

The following services are available on request 48 hours prior to the meeting; except for Monday meetings, for which the deadline shall be 4:00 p.m. of the last business day of the preceding week: For American sign language interpreters or the use of a reader during a meeting, a sound enhancement system, and/or alternative formats of the agenda and minutes, please contact Monica Fish at (415) 355-3709 to make arrangements for the accommodation. Late requests will be honored, if possible.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call the Mayor's Office on Disability accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance
(Chapter 67 of the San Francisco Administrative Code)

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, Adele Destro, Interim Sunshine Task Force Administrator, City Hall, Room 409, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102-4683 at Phone No.: (415) 554-7724; Fax No.: (415) 554-

7854; E-mail: sotf@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct Code §2.100, et. seq] to register and report lobbying activity. For more information about the Lobbyist Ordinance, please contact the Ethics Commission at: 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300, fax (415) 581-2317; web site at www.sfgov.org/ethics.

Important Information

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

NOTE: Persons unable to attend the meeting may submit to the Commission on the Environment, by the time the proceedings begin, written comments regarding the agenda items above. These comments will be made a part of the official public record and shall be brought to the attention of the Commission on the Environment members. Any written comments should be sent to: Commission Secretary of the Environment, 11 Grove Street, San Francisco, CA 94102 by 5:00 p.m. on the day prior to the hearing. Comments which cannot be delivered to the Commission Secretary by that time may be taken directly to the hearing at the location above.

When bringing handouts to meetings, please photocopy on both sides of the paper and try to use post-consumer recycled or tree-free paper. Also, please bring sufficient copies of handouts for the Commission, the Commission Secretary and the public.

Posted: 2/17/05

Resolution Duke Energy Settlement

Resolution approving the expenditure of $250,000 of the Duke Energy Settlement for planting and maintaining trees in the Bayview, Potrero Hill, and Visitacion Valley neighborhoods of San Francisco.

WHEREAS, The San Francisco Board of Supervisors and Mayor have settled the lawsuit filed by the City and County of San Francisco, on behalf of the People of California, against the Duke Energy Companies (see attached); and

WHEREAS, $250,000 of the $ 207.5 Million settlement is allotted for purchase, siting, planting, and long term maintenance of trees in areas of San Francisco affected by electric generation; and

WHEREAS, The Department of the Environment and the Department of Public Works must work together to develop and implement the $ 250,000 planting program; and

WHEREAS, The Department of the Environment and the Department of Public Works have sought, and continue to seek, public input in the development and implementation of this program; and

WHEREAS, the Bayview-Hunters Point, Potrero Hill, and Visitacion Valley neighborhoods are affected by electric power generation; and

WHEREAS, The Department of the Environment and the Department of Public Works have jointly developed a plan to plant and maintain approximately 240 new trees in a single community-based tree-planting event in the Bayview-Hunters Point neighborhood on March 12, 2005 as part of Arbor Week festivities; and to additionally plant and maintain approximately 528 new trees by December 3rd 2005 in the Bayview-Hunters Point, Potrero Hill, and Visitacion Valley neighborhood; and therefore, be it

RESOLVED, That the Commission on the Environment approves the expenditure o $250,000 of the Duke Energy Settlement for planting and maintaining trees in the Bayview Potrero Hill, and Visitacion Valley neighborhoods of San Francisco in accordance with th plan and this Resolution.

I hereby certify that this resolution was adopted by the Commission on the Environment at its special meeting on February 24, 2005.

____
Commission Secretary

VOTE:

Ayes:

Noes:

Absent:

DRAFT: February 17, 2005

Duke Energy Settlement

768 New Trees in Southeast San Francisco

A Joint Proposal of:
SF Department of Public Works
SF Department of the Environment
February 17, 2005

I. Summary

This document sets forth a plan, schedule, and budget for the **$250,000** Duke Energy Settlement earmarked for planting trees in San Francisco neighborhoods most affected by electric power generation. San Francisco's Department of the Environment (DOE) and the Department of Public Works (DPW) are working together to develop and implement this program and have jointly developed this proposal. As a result of this project, **768** new trees will be planted and maintained in San Francisco's Bayview, Potrero Hill, and Visitacion Valley neighborhoods between March 12th and December 3rd, 2005.

II. Background

In February 2001, the City Attorney's Office filed a lawsuit, on behalf of the People of California, alleging unfair business practices against more than a dozen energy generators and sellers, including the Duke Energy Companies. The lawsuit alleged that the Companies unlawful conduct caused or contributed to price spikes in the wholesale electricity market and shortages of electricity that began in June 2000. As a result of the recent settlement, San Francisco received $500,000 to use for energy efficiency, renewable energy or environmental justice projects in areas affected by electric generation in San Francisco.

The settlement proceeds are to be used as follows: (1) $250,000 for purchasing and installing small scale solar power systems in non-profit organizations and homes of low-income homeowners in areas of San Francisco affected by electric generation. The Department of the Environment and the Public Utilities Commission are working together to develop and implement this program. (2) $250,000 for purchase and planting of trees in areas of San Francisco affected by electric generation. The Department of the Environment and the Department of PublicWorks are working together to develop and implement this program.

III. Planting Program: Arbor Day and Beyond

Phase 1: *A Festive Arbor Day in the Bayview (240 New Trees)*
March 12th, 2005

DOE and DPW propose initially using $90,150 to sponsor a large festive March 12th Arbor Day event in the Bayview neighborhood that will result in the planting and maintenance of **240** new trees. The Project will be a joint undertaking of DOE, DPW, and Friends of the Urban Forest, as well as community partner like Alice Griffith/Double Rock Baptist Church and local schools such as Drew Elementary. DPW will plant 170 new trees on Ingalls Avenue and 30 within the Alice Griffith Development. In a coordinated, simultaneous event, Friends of the Urban Forest will also plant 35 trees on Bayview residential streets and 5 trees on streets fronting the Charles Drew Elementary

School. Both the DPW and FUF planting events are being supported by large-scale volunteer recruitment efforts currently underway.

The bulk of administrative costs (10%) allowed by the settlement agreement will be used to support the development and printing of posters, and brochures announcing the Arbor Day activities and providing information and outreach to the community. To maximize the number of trees planted, and the benefits of the Duke Settlement to the community, both the Department of Public Works and Friends of the Urban Forest are subsidizing the cost of planting on Arbor Day. To help inform the community about the link between trees and all pollution, all trees planted as part of the Duke Energy Settlement during and after Arbor Day will bear a label that states, “This tree provided through a settlement with energy generators to help offset air pollution and beautify the neighborhood.”

In conjunction with the trees planted at Charles Drew Elementary School, DOE’s School Education Program will give a school-wide assembly the week prior to the planting and will also conduct a range of urban forestry educational activities during Arbor Day including:

- Giveaway table for kids (kid fact sheets, pencils, lunch bags and t-shirts, and IPM bookmarks)
- Wonderful World of Worms station for kids (live worms and coloring activities)
- Make Your Own Planter station for kids and adults
- Fan 3 station for kids (sorting game and activity sheets)
- Students dressed as trees participating in the planting

PHASE 2: Maintaining a Presence

DPW and FUF Plantings after Arbor Day (528 New Trees)

After supporting the combined DPW and FUF Arbor Day activities, the remaining Duke funds will be used to “in-fill” (*218 trees total, 93 in Potrero Hill, 125 in Bayview*) on existing DPW-maintained streets, as well as to support ongoing FUF plantings in the Bayview (*120 trees*), Potrero Hill (*150 trees*), and Visitacion Valley (4*0 trees*) between March and December 2005.

The DPW in-fill planting sites consist primarily of existing, yet empty, tree basins. Some of these basins still require work (either stump grinding, or cement repairs), while other basins are ready to plant, and therefore, do not require an additional cost of cement work built into the planting cost (see budget for breakdown). The sites are all located on existing DPW-maintained streets, which will help ensure they receive long-term care through DPW maintenance Program.

Friends of the Urban Forest will conduct a series of eight (8) community-based plantings in the Bayview, Potrero Hill, and Visitacion Valley neighborhoods between Arbor Day and December 3rd, 2005. FUF will also provide early tree care through both scheduled (at 18 and 36 months) and emergency visits as needed. Moreover, long-term care on these trees will be provided, in part, by FUF’s Youth Tree Care Program, a well-established program that has provided job skills and on the ground tree care training to over 200 low-income youth over the last 10 years.

IV. Project Schedule

Date	Neighborhood	Number tree	Responsible
March 12	Bayview	240	FUF, DPW, DOE
Various in-fill	Bayview	125	DPW
Various in-fill	Potrero Hill	93	DPW
May 7	Bayview	50	FUF
July 9	Potrero Hill	40	FUF
July 16	Bayview	30	FUF
August 6	Visitacion Valley	40	FUF
September 3	Bayview	40	FUF
September 10	Potrero Hill	40	FUF
November 12	Potrero Hill	40	FUF
December 3	Potrero Hill	30	FUF

V. Project Budget

PHASE 1: Arbor Day Celebration

DPW Arbor Day Celebration

Item	Expense	Total Expense
(170) Ingalls St.[1] planting	$ 280	$47,600
(30) Alice Griffith Development	$ 280	$ 8,400
Administrative Costs (brochure and Poster development and printing		$ 21,250
Total DPW Arbor Day Costs		$ 77,250

FUF Arbor Day Celebration

Item	Expense	Total Expense
Community Outreach (Print materials + Staff)	$1,900	
(35) – Trees in Bayview neighborhood	$0	$0
(5) – Trees at Dew Elementary School	$0	$0
(40) – (1) day/month/2- yr. duration for Emergency Tree Care	$7,500	$7,500
(40) – 18-Month Tree Care Visit	$35	$1,400
(40) – 36-Month Tree Care Visit	$35	$1,400
Total FUF Arbor Day Cost		$12,200

Total Arbor Day Cost :	**$90,150**
Total New Arbor Day Trees:	**240**

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[1] Virtually all of the basins on Ingalls street will have to be cut, and there will likely be some planter preparation in Alice Griffith Development, as well. In addition, these trees will each be planted with 4 supporting stakes, to minimize vandalism and damage by cars and car doors. Lastly, these trees will be 24" box.

Budget, cont.

PHASE 2: Maintaining a Presence

Additional Plantings in-fill on existing DPW-maintained streets

	# Trees	Cost per tree[2]	Total Cost
DPW existing sites without basin work	125	$315	$39,375
DPW existing sites with basin work or new basins	93	$435	$40,455
Total in-fill planting costs	218		$79,830

Additional FUF Plantings March 12,2005- December 3rd, 2005

Bayview Planting – May 7, 2005 – Planting (50) Trees

Item	Expense	Total Expense
Community Outreach (Print materials + Staff)	$1,900	
(50) - Trees	$0	$0
(50) – (1) day/month/2- yr. duration for Emergency Tree Care	$7,500	$7,500
(50) – 18-Month Tree Care Visit	$35	$1,750
(50) – 36-Month Tree Care Visit	$35	$1,750
Total May 7th Tree Planting		**$12,900**

Potrero Hill Tree Planting – July 9, 2005 – Planting (40) Trees

Item	Expense	Total Expense
Community Outreach (Print materials)	$1,900	$900
(40) - Trees	$2,000	$2,000
(40) – 2-Month Tree Care Visit	$1,400	$1,400
(40) – 18-Month Tree Care Visit	$35	$1,400
(40) – 36-Month Tree Care Visit	$35	$1,400
Total July 9th Tree Planting		**$7,100**

Bayview Tree Planting – July 16, 2005 – Planting (30) Trees

Item	Expense	Total Expense
Community Outreach (Print materials + Staff)	$1,900	
(30) - Trees	$0	$0
(30) – (1) day/month/2- yr. duration for Emergency Tree Care	$7,500	$7,500
(30) – 18-Month Tree Care Visit	$35	$1,050
(30) – 36-Month Tree Care Visit	$35	$1,050
Total July 16th Tree Planting		$11,500

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[2] (includes tree, stakes and ties)

Visitacion Valley Tree Planting – August 6, 2005 – Planting (40) Trees

Item	Expense	Total Expense
Community Outreach (Print materials)	$900	$900
(40) - Trees	$2,000	$2,000
(40) – 2-Month Tree Care Visit	$1,400	$1,400
(40) – 18-Month Tree Care Visit	$35	$1,400
(40) – 36-Month Tree Care Visit	$35	$1,400
Total August 6th Tree Planting		**$7,100**

Bayview Tree Planting – September 3, 2005 – Planting (40) Trees

Item	Expense	Total Expense
Community Outreach (Print materials + Staff)	$1,900	$1,900
(40) - Trees	$0	$0
(40) – (1) day/month/2- yr. duration for Emergency Tree Care	$7,500	$7,500
(40) – 18-Month Tree Care Visit	$35	$1,400
(40) – 36-Month Tree Care Visit	$35	$1,400
Total Sept. 3rd Tree Planting		**$12,200**

Potrero Hill Tree Planting – September 10, 2005 – Planting (40) Trees

Item	Expense	Total Expense
Community Outreach (Print materials)	$900	$900
(40) - Trees	$2,000	$2,000
(40) – 2-Month Tree Care Visit	$1,400	$1,400
(40) – 18-Month Tree Care Visit	$35	$1,400
(40) – 36-Month Tree Care Visit	$35	$1,400
Total Sept. 10th Tree Planting		**$7,100**

Potrero Hill Tree Planting – November 12, 2005 – Planting (40) Trees

Item	Expense	Total Expense
Community Outreach (Print materials)	$900	$900
(40) - Trees	$2,000	$2,000
(40) – 2-Month Tree Care Visit	$1,400	$1,400
(40) – 18-Month Tree Care Visit	$35	$1,400
(40) – 36-Month Tree Care Visit	$35	$1,400
Total Nov. 12th Tree Planting		**$7,100**

Potrero Hill Tree Planting – December 3, 2005 – Planting (30) Trees

Item	Expense	Total Expense
Community Outreach (Print materials + Staff)	$900	
(30) - Trees	$0	$0
(30) – (1) day/month/2- yr. duration for Emergency Tree Care	$7,500	$7,500
(30) – 18-Month Tree Care Visit	$35	$1,050
(30) – 36-Month Tree Care Visit	$35	$1,050
Total Dec. 3rd Tree Planting		**$11,500**

Total Phase 2 Cost:	**$156,330**
Total Phase 2 Trees:	**528**

Total Project Budget

Phase 1: Arbor Day Plantings- 240 Tree	**$ 90,150**
Phase 2: Post-Arbor Day Plantings- 528 Trees	**$ 156,330**
	$ 246,480
DOE Administrative:	**$ 3,520**
Project Total	**$ 250,000**

CITY AND COUNTY OF SAN FRANCISCO

COMMISSION ON THE ENVIRONMENT

GAVIN NEWSOM
MAYOR

JARED BLUMENFELD
DIRECTOR

NIA CROWDER
PRESIDENT

ALAN MOK
COMMISSIONER

PAUL PELOSI, JR.
COMMISSIONER

ARLENE RODRIGUEZ
COMMISSIONER

JOHANNA WALD
COMMISSIONER

ANGELO KING
COMMISSIONER

CHRISTINA DESSER
COMMISSIONER

MONICA FISH
MMISSION SECRETARY

February 17, 2005

TO: Commissioners, Commission on the Environment and Department of the Environment – CCSF Employees Class 5644 and above

From: Monica Fish, Commission Secretary

RE: Annual Statement of Economic Interest and Sunshine Ordinance Declaration Form for 2004/05

It is again that time of year when the ***Annual Statement of Economic Interest (Form 700) and Sunshine Ordinance Declaration Form*** must be filed with the Ethics Commission by Department heads and all members of City boards and commissions. City and County of San Francisco (CCSF) Employees Class 5644 and above are designated as filers in the Conflict of Interest Code and must file their Form 700 with their department head, who serves as the filing officer for those statements. They are not required to fill out the Sunshine Ordinance Declaration Form.

You may go online to complete and print the Form 700 at http://www.fppc.ca.gov/forms/Form700-04-05.pdf. Please use this year's form and print only the actual forms you need. The forms are interactive which means you can fill them out on the computer before printing them out to sign and file. Please note that forms are due to the Ethics Commission no later than **April 1, 2005** or late fees will be assessed. For your reference I have attached the Section of the Charter that stipulates your disclosure category. Essentially The Commission, Director and Deputy Directors are Category 1. The Principal Environmental Specialists and Environmental Program Managers are Category 2.

The City Attorney's Office will be providing an annual Sunshine and Ethics training on Monday, March 7, 2005 from 5:30 to 8:00 p.m. at the Herbst Theater, 401 Van Ness Avenue in San Francisco. Department heads and Commission members' attendance is required at this session or a session to be scheduled at a later date. The training may or may not be available online or DVD/video this year in which case you would have to attend a live training session. You would be required to view the training for this year, not the one that is currently online or on DVD/video. Please complete the ***Sunshine Ordinance Declaration Form,*** a copy of which is enclosed and attached to this email. The due date for the form to be delivered to the Ethics Commission is no later than **April 1, 2005.**

11 Grove Street, San Francisco, California 94102
Telephone (415) 355-3709 ■ Fax 554-6393 ■ E-mail: monica.fish@sfgov.org ■ Website: www.sfenvironment.com

The Department Head and Commissioners may hand in the completed ***Annual Statement of Economic Interest (Form 700)* and *Sunshine Ordinance Declaration Form*** (**original and one copy of both--original signature**) to me by the next Commission meeting of **Tuesday, March 24, 2005**, so that I can make sure they are delivered to the Ethics Commission before the deadline. You may also deliver the forms directly to the Ethics Commission before **April 1, 2005**. Please provide me with a copy if you are sending your forms directly to the Ethics Commission for public record. CCSF Employees are required to turn in their Form 700 **original signed forms** directly to me before **April 1, 2005** to avoid penalties.

If you have any questions on how to complete your forms, please do not hesitate to call me at (415) 355-3709.

Thank you.

CITY AND COUNTY OF SAN FRANCISCO

COMMISSION ON THE ENVIRONMENT

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MAYOR

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ANGELO KING
COMMISSIONER

MONICA FISH
MMISSION SECRETARY

February 18, 2005

To: Commissioners, Department Head, Deputy Director

From: Monica Fish, Commission Secretary

RE: Life Safety Compliance at City Hall Meetings

At the January 25, 2005 Commission meeting, a request was made to look into why the public was not allowed to stand in the Commission meeting rooms. City Hall Building Management has reported as follows:

When City Hall reopened after the renovation, the Fire Marshall and the Mayor's Disability Council had specific requirements regarding City Hall room capacity in accordance with access and egress safety requirements in the event of an emergency or evacuation. Some discretion is given in the case of 3-4 people by an entrance, but beyond that an overflow room will be provided that allows those unable to get entrance to the room to see and hear the proceedings.

At many meetings, the Commission will reduce the length of time allocated for public comment and ask that people leave the room once they have commented on an item in order to allow those outside to come in and speak. Time is also given for people in overflow rooms who have been called to speak to get to the hearing room.

The issue is basically regarding safety and the mobility of people getting in and out of doors in case of emergency. If you have any questions, please let me know.

11 Grove Street, San Francisco, California 94102
Telephone (415) 355-3709 ■ Fax 554-6393 ■ E-mail: monica.fish@sfgov.org ■ Website: www.sfenvironment.com

CITY AND COUNTY OF SAN FRANCISCO

COMMISSION ON THE ENVIRONMENT

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ANGELO KING
COMMISSIONER

MONICA FISH
MMISSION SECRETARY

February 18, 2005

To: Commissioners, Department Head, Deputy Director

From: Monica Fish, Commission Secretary

RE: Commissioner Parking during City Hall Meetings

Department of Parking and Traffic has advised that Commissioners are able to park in the Civic Center Garage located at 355 McAllister Street with no charge, but only during full Commission meetings (not subcommittee meetings).

You would simply take a ticket when entering the garage, print your name on the ticket and present it to the Cashier when leaving the garage. The Cashier has a list of Commissioners, meeting dates and times.

If you have any questions, please let me know.

11 Grove Street, San Francisco, California 94102
Telephone (415) 355-3709 ■ Fax 554-6393 ■ E-mail: monica.fish@sfgov.org ■ Website: www.sfenvironment.com

City and County of San Francisco

Commission on the Environment

Gavin Newsom
Mayor

Jared Blumenfeld
Director

Nia Crowder
President

Paul Pelosi, Jr.
Vice President

Alan Mok
Commissioner

Arlene Rodriguez
Commissioner

Johanna Wald
Commissioner

Christina Desser
Commissioner

Angelo King
Commissioner

Monica Fish
ommission Secretary

February 22, 2005

To: Commissioners

From: Monica Fish, Commission Secretary

RE: Board of Supervisors Resolution on Local Shopping Bag Fee

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The Resolution instructing the Department of the Environment to complete a nexus study on a local shopping bag fee and or any other appropriate policy alternatives was unanimously passed at the February 8, 2005 Board meeting. A copy of the Resolution is at your station.

If you have any questions, please let me know.

11 Grove Street, San Francisco, California 94102
Telephone (415) 355-3709 ■ Fax 554-6393 ■ E-mail: monica.fish@sfgov.org ■ Website: www.sfenvironment.com

FILE NO. 050208 RESOLUTION NO. 123-05

[Resolution instructing the Department of Environment to complete a nexus study on a local shopping bag fee *and or any other appropriate policy alternatives.*]

Resolution instructing the Department of Environment to complete a nexus study in order to identify the relationship between the use of disposable supermarket shopping bags and various costs to the City, and to determine the legality and appropriateness of a local fee on these bags *and or any other appropriate policy alternatives.*

WHEREAS, The City and County of San Francisco has adopted citywide goals of 75% landfill diversion by 2010 and zero waste by 2020; and,

WHEREAS, The expansive usage of shopping bags and their typical disposal creates an impediment to San Francisco's landfill diversion goals; and,

WHEREAS, Plastic bags are difficult to recycle and currently contaminate material that is processed through San Francisco's recycling and composting programs; and,

WHEREAS, Shopping bags create significant litter problems in San Francisco's neighborhoods, highlighted by local residents in a series of townhall meetings held by the Department of the Environment, and also litter community beaches, sewer systems and the San Francisco Bay; and,

WHEREAS, on a global level, the production of shopping bags has significant environmental impacts each year, including the felling of over 10 million trees, use of over 12 million barrels of oil, and the deaths of over 100,000 marine animals from plastic entanglement; and

WHEREAS, governments in several countries have placed fees on bags, including the Republic of Ireland, which achieved a 90% decrease in shopping bag usage due to the introduction of a bag fee; and

WHEREAS, The Commission on the Environment introduced a Resolution on November 10, 2004 urging the Mayor and Board of Supervisors to adopt an ordinance requiring a fee on plastic and paper bags in San Francisco supermarkets, and

WHEREAS, California State law mandates that fee must directly relate to the activity to which it is applied, must be set at a proportional and reasonable level which cannot exceed the cost of addressing problems of the subject activity, must be not levied for unrelated purposes, and must bear a reasonable relationship to the payer's burden or benefit from the regulated activity, and

WHEREAS, The Department of the Environment has completed a preliminary analysis of costs incurred by the City due to usage of shopping bags and has suggested a fee of 17 cents per bag to cover those costs; and

WHEREAS, a broader external nexus study is necessary to definitively determine the relationship between usage of shopping bags and problems identified by the Department of the Environment, to quantify the costs to the City of dealing with problems created by the use of shopping bags, and if appropriate, to determine a fair and reasonable user fee to fund City costs associated with usage of shopping bags; therefore be it

RESOLVED, That the Mayor and Board of Supervisors of the City and County of San Francisco requests the Department of Environment to contract with an independent, external entity to complete a nexus study in order to identify the relationship between the use of disposable supermarket checkout bags and various costs to the City, and to determine the legality and appropriateness of a local fee on these bags *and or any other appropriate policy alternatives*; and

FURTHER RESOLVED, This study or an additional external study should determine the economic impact of this fee on San Francisco residents, particularly those residents with low or fixed incomes and residents with large families; and

FURTHER RESOLVED, That the Department of the Environment should work with the Office of the Treasurer, City and County of San Francisco and the Board of Supervisors, to determine the cost of collecting and disbursing user fees, which must be included in nexus; and

FURTHER RESOLVED, That the Department of Environment is instructed to utilize non-General Fund monies to complete this study; and

FURTHER RESOLVED, that the Department of Environment is instructed to complete this study by April 31, 2005; and

FURTHER RESOLVED, That the Department of Environment will report in writing to the Mayor and Members of the Board of Supervisors on the results of this nexus study immediately upon its completion.

City and County of San Francisco
Tails
Resolution

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 050208 **Date Passed:**

Resolution instructing the Department of Environment to complete a nexus study in order to identify the relationship between the use of disposable supermarket shopping bags and various costs to the City, and to determine the legality and appropriateness of a local fee on these bags.

February 8, 2005	Board of Supervisors — AMENDED, AN AMENDMENT OF THE WHOLE BEARING NEW TITLE Ayes: 10 - Alioto-Pier, Ammiano, Daly, Dufty, Elsbernd, Ma, Maxwell, McGoldrick, Peskin, Sandoval Excused: 1 - Mirkarimi
February 8, 2005	Board of Supervisors — ADOPTED AS AMENDED Ayes: 10 - Alioto-Pier, Ammiano, Daly, Dufty, Elsbernd, Ma, Maxwell, McGoldrick, Peskin, Sandoval Excused: 1 - Mirkarimi

File No. 050208

I hereby certify that the foregoing Resolution was ADOPTED AS AMENDED on February 8, 2005 by the Board of Supervisors of the City and County of San Francisco.

Gloria L. Young
Clerk of the Board

FEB 11 2005

Date Approved

Mayor Gavin Newsom

City and County of San Francisco
Commission on the Environment
SPECIAL MEETING

DRAFT MINUTES
Thursday, February 24, 2005, 4:00 p.m.
City Hall Room 421

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1. **CALL TO ORDER AND ROLL CALL:** The meeting was called to order at 4:08 p.m. Present: Commissioners Nia Crowder, Christina Desser, Alan Mok, and Johanna Wald. Excused/Absent: Commissioners Angelo King, Paul Pelosi, Jr. and Arlene Rodriguez.

2. **ACTION:** Consideration and approval of Resolution No. 001-05-COE "Urban Forestry Duke Energy Settlement."

   RESOLUTION APPROVING THE EXPENDITURE OF $250,000 OF THE DUKE ENERGY SETTLEMENT FOR PLANTING AND MAINTAINING TREES IN THE BAY VIEW, POTRERO HILL, AND VISITACION VALLEY NEIGHBORHOODS OF SAN FRANCISCO.

   Sponsor: Director Jared Blumenfeld

   Staff: Alexis Harte, Department of the Environment, Carla Short, DPW Urban Forestry

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   Staff member Alexis Harte presented background information on the Duke Energy Settlement and discussed the joint proposal of San Francisco Department of the Environment and San Francisco Department of Public Works that outlines how settlement funds would be allocated. The proposal is to plant trees in neighborhoods most affected by electric power generation. The settlement funds would be used for Arbor Day events/tree plantings on March 12 and for planting 528 new trees between Arbor Day and December 3, 2005 through a combination of Department of Public Works (DPW) and Friends of the Urban Forest (FUF) efforts. Carla Short, of DPW Urban Forestry discussed DPW's role in Arbor Day Phase 1 and Phase 2 tree planting and maintenance, and species of trees to be planted. DPW and FUF would be subsidizing the cost of trees and maintenance to get a maximum number of trees planted.

   Upon motion By Commissioner Wald and second by Commissioner Desser, Resolution No. 001-05-COE "Urban Forestry Duke Energy Settlement" was unanimously approved.

3. **ACTION:** Adoption of Minutes of the January 25, 2005 Meeting. Upon motion By Commissioner Wald and second by Commissioner Desser, the Minutes of the January 25, 2005 meeting were unanimously adopted.

   Public comment from Alexis Harte, Urban Forest Coordinator commended the Commission Secretary for her work.

4. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

   No public comment was heard at this time.

5. **DISCUSSION:** Discussion on selecting dates, topics and other relevant items for the Commission on the Environment Retreat.

   The Commission Retreat was tentatively set for Friday, April 8 from 9:30 a.m. – 2:00 p.m. at 111 Sutter Street, 20th Floor. Parking is available at the Crocker Galleria and the Sutter/Stockton garage. Commissioners would forward topic recommendations to the Commission Secretary. Recommended topics were (1) how to integrate public outreach into the work of the Staff and the Commission, (2) update on World Environment Day, and (3) how to develop green businesses in the Bayview. The Commission Secretary would be sending an email advising of parking, bus lines, and disability access.

6. **INFORMATION:** Commission Secretary's Report
   Monica Fish, Commission Secretary
   - Communications & Correspondence

     - Annual Sunshine and Ethics Training Monday, March 7, 2005. Commission Secretary discussed the Annual Sunshine and Ethics Training that the City Attorney's Office will be conducting at Herbst Theater, 401 Van Ness Avenue between 5:30 and 8:00 p.m. Commissioners and Department Heads are required to attend this training or indicate on the Sunshine Ordinance Declaration Form that they would agree to attend a future training session when offered.

     - Statement of Economic Interests (Form 700) and Sunshine Ordinance Declaration. Commission Secretary advised the Commissioners that forms and a memorandum outlining the process for filling out the Statement of Economic Interests (Form 700) and Sunshine Ordinance Declaration had been e-mailed to all Commissioners on February 18th. The Commissioners were requested to submit their completed original signed forms to the Commission Secretary at the March 22nd Commission meeting. Forms are due to the Ethics Commission by April 1st to avoid penalties.

     - Life Safety Compliance at City Hall Meetings. Commission Secretary advised the Commission that City Hall Building Management has reported that large numbers of people standing in the meeting rooms was not allowed in accordance with access and egress safety requirements established by the Fire Marshall and the Mayor's Disability Council. Overflow rooms are set up for meetings when a large crowd is expected.

     - Commissioner Parking during Commission Meetings. Commission Secretary reported that Commissioners are able to park at the Civic Center Garage located at 355 McAllister Street with no charge for full Commission meetings. The process for parking was explained. A recommendation was made to supply Commissioners with bus tokens if requested.

   - Update on Pending City Legislation
     - Board of Supervisors Resolution on Local Shopping Bag Fee Nexus Study. Commission Secretary reported that the Board of Supervisors approved the Resolution on February 8, 2005. A copy of the signed Resolution was distributed to Commissioners.

President Crowder would be directing Commission members to contact David Assmann with scoping comments on the Nexus Study.

7. **INFORMATION:** President's Announcements. President Crowder announced that additional topics for the April 8 Retreat would be to review short and long-range Commission plans and revisit Resolutions that were never finalized. Committee Reports would be discussed at the March 22 Commission meeting.

8. **INFORMATION:** New Business. Director Blumenfeld announced that Supervisor McGoldrick put forward an issue of congestion charging. The money to study this issue would come from funds the Department currently uses on transportation management programs (ex. commuter benefits program).

   Supervisor Maxwell is working with the Mayor's Office and the Department of the Environment on the Precautionary Purchasing Ordinance. Tom Hayden is pushing a somewhat related bill regarding an anti-sweatshop bill, which may or may not be merged into this ordinance.

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   No public comment was heard at this time.

10. **ADJOURNMENT.** The meeting adjourned at 4:55 p.m.

Respectfully submitted by,

Monica Fish, Commission Secretary

City and County of San Francisco
Commission on the Environment
SPECIAL MEETING

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FINAL MINUTES
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10. **ADJOURNMENT.** The meeting adjourned at 4:55 p.m.

Respectfully submitted by,

Monica Fish, Commission Secretary

Approved: March 22, 2005

SF *Environment*
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

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City and County of San Francisco
Commission on the Environment

Notice and Meeting Agenda
Tuesday, March 22, 2005, at 5:00 p.m.
City Hall, Room 416

Commission Members: Nia Crowder, President, Paul Pelosi, Jr., Vice President, Christina Desser, Angelo King, Alan Mok, Arlene Rodriquez, and Johanna Wald.

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

2. **ACTION:** Adoption of Minutes of the February 24, 2005 Special Meeting. (Explanatory Document: Draft Minutes of the February 24, 2005 Special Meeting)**

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

4. **ACTION:** Consideration and adoption of Resolution No. 003-05-COE Duke Energy Settlement for approval of plan to Implement Solar Energy Project (Explanatory Documents: Duke Energy Settlement Resolution Solar Energy Systems 003-05-COE and Duke Energy Settlement Joint Proposal of San Francisco Public Utilities Commission and San Francisco Department of the Environment for Solar Systems in Southeast San Francisco (Word))**

   RESOLUTION APPROVING THE EXPENDITURE OF $250,000 OF THE DUKE ENERGY SETTLEMENT FOR THE INSTALLATION OF SOLAR ENERGY SYSTEMS IN THE BAYVIEW AND POTRERO HILL NEIGHBORHOODS OF SAN FRANCISCO.

   Sponsor: Director Jared Blumenfeld
   Staff: Anne Eng and Raymond Manion, Department of the Environment

5. **INFORMATION:** Report on Community Choice Aggregation.

   Sponsor: Commissioner Nia Crowder
   Speaker: San Francisco Public Utilities Commission Representative

Department of the Environment, City and County of San Francisco
11 Grove Street, San Francisco, CA 94102
Telephone: (415) 355-3700 • Fax: (415) 554-6393
Email: Monica.Fish@sfgov.org • www.sfenvironment.com

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6. **INFORMATION:** Precautionary Principle Background and Update

Sponsors: Director Jared Blumenfeld and Debbie Rafael, Toxic Reduction Program Manager, Department of the Environment

7. **INFORMATION:** Update on World Environment Day (WED)

Sponsor: Director Jared Blumenfeld

8. **INFORMATION:** Hydrogen and Renewable Energy Committee Report
   - Commissioner Crowder will highlight the March 21, 2005 Special Meeting.

9. **INFORMATION:** Operations Committee Report
   - The January 19, 2005 meeting was cancelled due to a lack of quorum. Commissioner Rodriguez will discuss the upcoming meeting scheduled for April 20, 2005, at 4:00 p.m. at the Department of the Environment, Ground Floor Conference Room.

10. **INFORMATION:** Policy Committee Report
    - Commissioner Wald will highlight the February 24, 2005 meeting. Commissioner Wald will review the agenda for the upcoming meeting on Thursday, March 24, 2005 at 5:00 PM at City Hall, Room 421.

11. **INFORMATION:** Director's Report
    - Jared Blumenfeld, Director, Department of the Environment will give updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division.

12. **INFORMATION:** Commission Secretary's Report

    Monica Fish, Commission Secretary

    1. Communications & Correspondence

    - Statement of Economic Interests (Form 700) and Sunshine Declaration Forms are due to the Commission Secretary before March 30 or to the Ethics Commission by April 1.

    2. Update on Pending City Legislation

    - The Bag Fee Nexus Study scheduled completion date to the Department of the Environment is April 22, 2005.

13. **INFORMATION**: President's Announcements

14. **INFORMATION:** New Business

15. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

16. **ADJOURNMENT**

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506, (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org within three business days of a meeting.*

Public Comment

At this time, members of the public may address the Commission on items of interest that are within the subject matter jurisdiction of the Commission but are not on today's agenda. Public comment will be taken following each agendized item. Each member of the public may address the Commission for up to three minutes, unless otherwise announced by the President. If it is demonstrated that the comments by the public will exceed 15 minutes, the President may continue Public Comment to another time during the meeting.

The Brown Act forbids the Commission from taking action or discussing any item or issue not appearing on the posted agenda. This rule applies to issues raised in public comment as well. In response to public comment, not on an agendized item, the Commission is limited to:

1. Briefly responding to statements made or questions posed by members of the public, or
2. Request staff to report back on a matter at a subsequent meeting, or
3. Directing staff to place the item or issue on a future agenda (Government Code Section 54954.2(a).)

Disability Access

The Commission on the Environment meetings are generally held in the Civic Center area. Please see the agenda for exact meeting location. The Commission meeting rooms are wheelchair accessible. The closest accessible BART station is the Civic Center Station at United Nations Plaza and Market Street. Accessible MUNI lines serving this location are: #71 Haight/Noriega and the F Line to Market and Van Ness and the Metro Stations at Van Ness and Market and at Civic Center. For information about MUNI accessible services call (415) 923-6142. There is accessible curbside parking adjacent to City Hall on Grove Street and Van Ness Avenue and in the vicinity of the Veterans Building at 401 Van Ness Avenue adjacent to Davies Hall and the War Memorial Complex.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call the Mayor's Office on Disability accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance
(Chapter 67 of the San Francisco Administrative Code)

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, Adele Destro, Interim Sunshine Task Force Administrator, City Hall, Room 409, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102-4683 at Phone No.: (415) 554-7724; Fax No.: (415) 554-7854; E-mail: sotf@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct Code §2.100, et. seq] to register and report lobbying activity. For more information about the Lobbyist Ordinance, please contact the Ethics Commission at: 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300, fax (415) 581-2317; web site at www.sfgov.org/ethics.

Important Information

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

NOTE: Persons unable to attend the meeting may submit to the Commission on the Environment, by the time the proceedings begin, written comments regarding the agenda items above. These comments will be made a part of the official public record and shall be brought to the attention of the Commission on the Environment members. Any written comments should be sent to: Commission Secretary of the Environment, 11 Grove Street, San Francisco, CA 94102 by 5:00 p.m. on the day prior to the hearing. Comments which cannot be delivered to the Commission Secretary by that time may be taken directly to the hearing at the location above.

When bringing handouts to meetings, please photocopy on both sides of the paper and try to use post-consumer recycled or tree-free paper. Also, please bring sufficient copies of handouts for the Commission, the Commission Secretary and the public.

Posted: 3/17/05

FILE NO. 2005-03

RESOLUTION NO.
Add number once adopted

Resolution Duke Energy Settlement

Resolution approving the expenditure of $250,000 of the Duke Energy Settlement for the installation of solar energy systems in the Bayview and Potrero Hill neighborhoods of San Francisco.

WHEREAS, the San Francisco Board of Supervisors and Mayor have settled a lawsuit filed by the City and County of San Francisco, on behalf of the People of California, against the Duke Energy Companies; and

WHEREAS, $250,000 of the settlement is dedicated for the purchase and installation of small scale solar power systems in buildings owned and operated by non-profit organizations and homes of low-income homeowners in areas of San Francisco affected by electric generation; and

WHEREAS, the San Francisco Department of the Environment (SFE) and San Francisco Public Utilities Commission (SF PUC) must work together to develop and implement the $ 250,000 solar program; and

WHEREAS, SFE has sought, and will continue to seek, public input in the development and implementation of this solar program; and

WHEREAS, the Bayview-Hunters Point and Potrero neighborhoods are affected by electric power generation; and

WHEREAS, SFE and the SF PUC have jointly developed a plan to install approximately 24 kW of solar power on buildings owned and operated by non-profit organizations and homes occupied by low-income homeowners, in the Bayview-Hunters Point and Potrero neighborhoods; and therefore, be it

FILE NO. 2005-03

RESOLUTION NO.
Add number once adopted

RESOLVED, That the Commission on the Environment approves the expenditure of $250,000 of the Duke Energy Settlement for the installation of solar energy systems in the Bayview-Hunters Point and Potrero Hill neighborhoods of San Francisco in accordance with the plan and this Resolution.

I hereby certify that this resolution was adopted by the Commission on the Environment at its regular meeting on March __, 2005.

____
Commission Secretary

VOTE:

Ayes:

Noes:

Absent:

DRAFT: March 10, 2005

Duke Energy Settlement
Solar Systems in Southeast San Francisco

A Joint Proposal of:
SF Public Utilities Commission and
SF Department of the Environment
March 10, 2005

I. Summary

This document sets forth a plan for the **$250,000** Duke Energy Settlement dedicated for solar energy systems in San Francisco neighborhoods impacted by electric power generation. San Francisco's Department of the Environment (SFE) and the San Francisco Public Utilities Commission (SF PUC) have worked together to develop this proposal. The Duke Energy settlement funds will result in the purchase of 11 solar systems, for an estimated 24 kW of solar power, to be installed on buildings owned and occupied by non-profit organizations and homes of low-income residents in San Francisco's Bayview-Hunters Point and Potrero neighborhoods.

II. Background

In February 2001, the City Attorney's Office filed a lawsuit, on behalf of the People of California, alleging unfair business practices against more than a dozen energy generators and sellers, including the Duke Energy Companies (Duke Energy). The lawsuit alleged that Duke Energy's unlawful conduct caused or contributed to price spikes in the wholesale electricity market and shortages of electricity that began in June 2000. As a result of the recent settlement, San Francisco received $500,000 to use for energy efficiency, renewable energy or environmental justice projects in areas affected by electric generation in San Francisco.

The Duke Energy settlement proceeds are to be used for two specific programs. (1) $250,000 for purchasing and installing small-scale solar power systems on buildings of non-profit organizations and homes of low-income residents in areas of San Francisco that are affected by electric generation; and (2) $250,000 for purchase and planting of trees in areas of San Francisco affected by electric generation. Last month, the Commission on the Environment approved the plan submitted by SFE and Department of PublicWorks to implement the tree planting program. The following plan covers the solar energy project that will be funded by the remaining $250,000 in Duke Energy settlement proceeds.

III. Installation of Solar Systems

A. SFE will issue a RFP and award Environmental Justice grants to non-profit organizations.

We propose to transfer $250,000 of the Duke Energy settlement funds to the Environmental Justice (EJ) program of SFE. SFE will issue a Request for Proposals (RFP), and solicit grant proposals from non-profit organizations which can directly install the solar systems, or partner with licensed contractors to install the solar systems. When evaluating the grant proposals, we will give weight to the following considerations: (a) utilization of programs operated by the City, community or non-profits that could implement the program in a cost-effective and timely manner; and (b) provision of jobs to underemployed residents of San Francisco. We anticipate awarding an EJ grant to one or more non-profit organizations, for the purchase and installation of 11 solar systems for an estimated 24 kW in solar power. The work performed by the non-profit organization will be governed by a standard City grant agreement (G-100) and a detailed workplan, which will identify specific tasks, outcomes and a financial budget. We anticipate the solar installations can be completed within one-year after issuance of the grant award. This schedule will depend on a variety of factors, including availability of solar equipment from manufacturers, utility grid interconnctions, and the Department of Building Inspection's permitting process.

The Environmental Justice program of SFE has direct experience in managing grants to support solar installation and job training. Between 2001 and 2004, SFE worked closely with a local non-profit organization called Bayview-Hunters Point Community Advocates that completed the installation of 39 solar systems on residential homes and non-profit buildings in the Bayview community, for a combined total of more than 50 kW in solar energy. This project covered a 3-year period and local Bayview residents were provided with extensive classroom training, admitted to the carpenters' union as apprentices, and received on-the-job solar installation training by licensed solar contractors. SFE will seek to build on the Advocates' accomplishments by involving local Bayview residents who are underemployed and have received training in solar installation, electrical wiring and/or carpentry skills.

The Board of Supervisors legislation authorizes the expenditure of $25,000 (10% of $250,000) for administrative expenses. SFE will initially allocate $15,000 (6%) of the $250,000 for administrative and public outreach costs. This money will be used for SFE staff salaries, benefits and overhead expenses associated with the issuance of the RFP and administration of the grant award over a one-year period. Most of the remaining $10,000 (4%) allowed for administrative costs will be used by SFE for public outreach and to develop educational tools and activities to help local residents learn about solar and renewable energy. SFE will reserve 1% of the funding, or $2,500 to spend on project evaluation costs, to determine the total amount of energy savings and other benefits of the project.

B. Identifying and Evaluating Candidate Sites

SFE and SF PUC have jointly identified the following project goals for the solar installations:

> Eight (8) solar systems, each 1.5 kW (for a total of 12 kW) to provide electricity for low-income residential homes and/or the common areas of multi-unit housing development projects in the Potrero and Bayview-Hunters Point neighborhoods; and
>
> Three (3) solar systems, each 4 kW (for a total of 12 kW) to provide electricity for buildings owned and occupied by non-profit organizations located in the Potrero and Bayview-Hunters Point neighborhoods.

The non-profit organization selected to install the solar systems will perform outreach and identify candidate solar sites in the Potrero and Bayview Hunters Point neighborhoods, with input from SFE and SF PUC technical staff. The candidate sites will need to be evaluated as to their suitability. This evaluation will include an analysis of the age and condition of the building rooftop, accessibility for maintenance, orientation of the building, shading and other factors.

C. Public Outreach

In developing this plan, SFE staff made presentations and solicited input from local residents at public meetings of the Potrero Power Plant Task Force, Southeast Waterfront Advisory Committee, and the Health and Environmental Subcommittee of the Bayview Project Area Committee. The plan has also been distributed to several non-profit organizations for their comments.

In general, members of the public and non-profit groups are enthusiastic and supportive of promoting solar energy in the Southeast communities. We will continue to keep the public informed about the solar project through regular updates at community meetings.

City and County of San Francisco
Commission on the Environment
MEETING

DRAFT MINUTES
Tuesday, March 22, 2005, 5:00 p.m.
City Hall, Room 416

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1. **CALL TO ORDER AND ROLL CALL:** The meeting was called to order at 5:12 p.m. Present: Commissioners Nia Crowder, Angelo King (5:15 p.m.), Alan Mok, Paul Pelosi, and Arlene Rodriguez (5:35 p.m.). Excused/Absent: Commissioners Christina Desser and Johanna Wald.

NOTE: Agenda items were heard out of order.

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3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

   There was no public comment at this time

6. **INFORMATION:** Precautionary Principle Background and Update
   Sponsors: Director Jared Blumenfeld and Debbie Raphael, Toxic Reduction Program Manager, Department of the Environment

   Director Blumenfeld gave background information and an update on the Precautionary Principle. A discussion was held on the following topics:

   - The goal of the Precautionary Principle—transforming the way we make decisions
   - The groups/entities/decision makers involved in the Precautionary Principle
   - The Public Process
   - Precautionary Principle and Risk and Science
   - The Precautionary Approach: Risk vs. Alternatives Assessments
   - Five Tenets of the San Francisco Ordinance
   - Public Participation Goals
   - San Francisco Implementation

   Debbie Raphael, Toxic Reduction Program Manager discussed implementation of the Precautionary Purchasing Ordinance. A discussion was held on the following topics:

   - San Francisco Environment Code Chapter 1 that defines the five tenets to implementing the Precautionary Principle

- San Francisco Environment Code Chapter 2 of the Environment Code, the Precautionary Purchasing Ordinance--how the five tenets would be incorporated into the City purchasing process
- Alternatives to hazardous products
- Precautionary Principle to be introduced to the Board of Supervisors in April
- Role of the Commission
- Public Involvement/Hearings
- The Precautionary Principle and Decision Makers' Process
- Program Structure
- Department Exemption Process
- Next Step: Criteria Selection, Public Process, and Advisory Group

Public comment from Neil Gendel, Director, Healthy Children Organizing Project and member of Bay Area Working Group on the Precautionary Principle speaking in favor of the Precautionary Principle Purchasing Ordinance. Discussed the mission of the Healthy Children Organizing Project and protecting children's exposure to toxic chemicals such as lead and mercury. Noted that products purchased by the City are full of toxins and may affect the health of employees and their families.

Public comment from Karen Pierce, member, Bay Area Working Group on the Precautionary Principle, on the Working Group's goal of making the precautionary approach the culture of San Francisco.

2. **ACTION:** Adoption of Minutes of the February 24, 2005 Special Meeting.

   Upon motion By Commissioner Pelosi and second by Commissioner Mok, the Minutes of the February 24, 2005 Special Meeting were unanimously adopted.

4. **ACTION:** Consideration and adoption of Resolution No. 003-05-COE Duke Energy Settlement for Approval of Plan to Implement Solar Energy Project.

   RESOLUTION APPROVING THE EXPENDITURE OF $250,000 OF THE DUKE ENERGY SETTLEMENT FOR THE INSTALLATION OF SOLAR ENERGY SYSTEMS IN THE BAYVIEW AND POTRERO HILL NEIGHBORHOODS OF SAN FRANCISCO.

   Sponsor: Director Jared Blumenfeld
   Staff: Anne Eng and Raymond Manion, Department of the Environment

   Anne Eng, Environmental Justice Program Manager gave background information on the $250,000 Duke Energy Settlement allocated for solar energy systems in San Francisco neighborhoods impacted by electric power generation. The plan is to transfer the $250,000 to the Environmental Justice program to issue a Request for Proposal and award environmental justice grants to non-profit organizations to install or partner with licensed contractors to install the solar systems. Project goals for solar installations were identified as described in the "Joint Proposal of SF Public Utilities Commission and SF Department of the Environment" Draft dated March 10, 2005. A "Clean Power Estimator" of costs and benefits for large systems for non-profit buildings and small systems for low-income housing was distributed and discussed.

Public comment from Karen Pierce, representing the Bay View Advocates (President) and the ACE Program in support of the Department of the Environment and the passage of the Resolution. Discussed the Bayview district converting to solar energy and public education.

Upon motion By Commissioner Pelosi and second by Commissioner King, Resolution No. 003-05-COE "Duke Energy Settlement for Approval of Plan to Implement Solar Energy Project" was unanimously approved.

5. **INFORMATION:** Report on Community Choice Aggregation.

Sponsor: Commissioner Nia Crowder
Speaker: San Francisco Public Utilities Commission Representative

Barbara Hale, Assistant General Manager for Power, San Francisco Public Utilities Commission (SFPUC) gave a report on Community Choice Aggregation (CCA). The following topics were discussed:

- Definition of Local Government Community Choice Aggregation and services the program would provide
- PG&E's Role Under CCA
- CCA Role as a Power Provider
- CCA in California and in San Francisco Background and Provisions
- Electric Service in SF Currently
- Community Choice Aggregation benefits for San Francisco
- Potential Generation (CCA) vs. Transmission and Distribution (PG&E) Revenues in San Francisco
- Draft Implementation Plan

Sean Casey, SFPUC discussed the factors affecting CCA's costs and potential success. Topics discussed are as follows:

- Customer Characteristics
- CCA Supplier Performance and Customer Responsibility Surcharge (CRS)
- CCA Short-Term Customer Rates Higher than PG&E's; CCA Long-Term Rates are Economic
- Potential CCA Project Administration and Staffing
- California Public Utilities Commission (CPUC) Rulemaking

- CCA and Renewable Energy
- Prop H Municipal Bonds
- Customer Opt-out Rules of CCA
- Next Steps: Board of Supervisors and CCA Task Force to determine alternatives, risks and opportunities.

Public comment from Karen Pierce asking if the proposed CT's would lead to San Francisco getting out of the responsibility of providing energy generation in the City. Ms. Hale answered that the CT would be a contractual relationship between the City of San Francisco and the Department of Water Resources. Those power plants would not be part of the CCA portfolio and would be separate public policy choices.

Public comment from Debbie Raphael, Department of the Environment requesting information on the factors contributing to the differences between PG&E's reliability of energy choices vs. the City's. Mr. Casey replied that most power outages would occur on the distribution and transmission side than on the generation side.

Items 7 and 11 were heard together.

7. **INFORMATION:** Update on World Environment Day (WED)

Sponsor: Director Jared Blumenfeld

Director Blumenfeld reported that at the May 21 press conference, Mayor Newsom along with former Mayor Brown and Senator Feinstein highlighted World Environment Day. The former Mayors Agnos, Brown, Feinstein, Jordan, and current Mayor Newsom would be the costs of the Committee for WED. The calendar of events was discussed. Specifics would be discussed at the Commission Retreat on April 8.

11. **INFORMATION:** Director's Report
    - Jared Blumenfeld, Director, Department of the Environment gave updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division. Main points that were discussed are listed in the Director's Monthly Report dated March 2005.

      Commissioner King reported that the Bayview Opera House, the site originally selected to host the Bayview Farmers Market, has considerations that have to be worked out with the City before staging the event there.

8. **INFORMATION:** Hydrogen and Renewable Energy Committee Report
   - Commissioner/President Crowder highlighted the March 21, 2005 Special Meeting reporting that (1) Cal Broomhead, Energy Manager, Department of the Environment gave a summary of the Community Aggregation Presentation by the San Francisco Public Utilities Commission at the San Francisco Local Agency Formation Commission meeting on March 11; (2) a presentation on the November 2004 Green Cities Economic Opportunity Symposium was given; and (3) the structure of the Hydrogen and Renewable Energy Committee would be discussed at the Commission Retreat.

10. **INFORMATION**: Policy Committee Report
    - Commissioner/President Crowder announced that Commissioner Wald would highlight the February 24, 2005 Policy Committee meeting at the April 8 Commission Retreat.

9. **INFORMATION:** Operations Committee Report
   - The January 19, 2005 meeting was cancelled due to a lack of quorum. Commissioner Rodriguez announced that the next meeting is scheduled for April 20, 2005, at 4:00 p.m. at the Department of the Environment, Ground Floor Conference Room.

12. **INFORMATION:** Commission Secretary's Report
    Monica Fish, Commission Secretary
    - Communications & Correspondence

      Statement of Economic Interests (Form 700) and Sunshine Declaration Forms are due to the Commission Secretary before March 30 or to the Ethics Commission by April 1.

    - Update on Pending City Legislation

      The Bag Fee Nexus Study scheduled completion date to the Department of the Environment is April 22, 2005.

13. **INFORMATION**: President's Announcements

    No announcement was made at this time.

14. **INFORMATION:** New Business

    An agenda for the April 8 Commission Retreat would be posted on the Commission website by March 23rd.

15. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

    No public comment was heard at this time.

16. **ADJOURNMENT:** The meeting adjourned at 7:00 p.m.

** Copies of explanatory documents are available at the Commission office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., or when possible, on the Commission's webpage: http://sfgov.org/site/sfenvironment_meeting.asp?id=15519 or upon request to the Commission Secretary, at telephone number 415-355-3709, or via e-mail at Monica.Fish@sfgov.org.

Respectfully submitted by,

Monica Fish, Commission Secretary

City and County of San Francisco
Commission on the Environment
MEETING

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APPROVED MINUTES
Tuesday, March 22, 2005, 5:00 p.m.
City Hall, Room 416

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1. **CALL TO ORDER AND ROLL CALL:** The meeting was called to order at 5:12 p.m. Present: Commissioners Nia Crowder, Angelo King (5:15 p.m.), Alan Mok, Paul Pelosi, and Arlene Rodriguez (5:35 p.m.). Excused/Absent: Commissioners Christina Desser and Johanna Wald.

NOTE: Agenda items were heard out of order.

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

   There was no public comment at this time

6. **INFORMATION:** Precautionary Principle Background and Update
   Sponsors: Director Jared Blumenfeld and Debbie Raphael, Toxic Reduction Program Manager, Department of the Environment

   Director Blumenfeld gave background information and an update on the Precautionary Principle. A discussion was held on the following topics:

   - The goal of the Precautionary Principle—transforming the way we make decisions
   - The groups/entities/decision makers involved in the Precautionary Principle
   - The Public Process
   - Precautionary Principle and Risk and Science
   - The Precautionary Approach: Risk vs. Alternatives Assessments
   - Five Tenets of the San Francisco Ordinance
   - Public Participation Goals
   - San Francisco Implementation

   Debbie Raphael, Toxic Reduction Program Manager discussed implementation of the Precautionary Purchasing Ordinance. A discussion was held on the following topics:

   - San Francisco Environment Code Chapter 1 that defines the five tenets to implementing the Precautionary Principle

- San Francisco Environment Code Chapter 2 of the Environment Code, the Precautionary Purchasing Ordinance--how the five tenets would be incorporated into the City purchasing process
- Alternatives to hazardous products
- Precautionary Principle to be introduced to the Board of Supervisors in April
- Role of the Commission
- Public Involvement/Hearings
- The Precautionary Principle and Decision Makers' Process
- Program Structure
- Department Exemption Process
- Next Step: Criteria Selection, Public Process, and Advisory Group

Public comment from Neil Gendel, Director, Healthy Children Organizing Project and member of Bay Area Working Group on the Precautionary Principle speaking in favor of the Precautionary Principle Purchasing Ordinance. Discussed the mission of the Healthy Children Organizing Project and protecting children's exposure to toxic chemicals such as lead and mercury. Noted that products purchased by the City are full of toxins and may affect the health of employees and their families.

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Respectfully submitted by,

Monica Fish, Commission Secretary

Adopted: April 8, 2005

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

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City and County of San Francisco
Commission on the Environment

Notice and Special Meeting Agenda
RETREAT
Friday, April 8, 2005, 9:30 a.m. – 2:00 p.m.
111 Sutter Street, 20th Floor

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ecial

Commission Members: Nia Crowder, President, Paul Pelosi, Jr., Vice President, Christina Desser, Angelo King, Alan Mok, Arlene Rodriquez, and Johanna Wald.

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

CALL TO ORDER AND ROLL CALL

ACTION: Adoption of Minutes of the March 22, 2005 Meeting. (Explanatory Document: Draft Minutes of the March 22, 2005 Meeting (Word))**

PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

DISCUSSION: Public outreach to the community on environmental issues.

DISCUSSION: Update on World Environment Day and discussion on Commissioners' role and participation in events.

DISCUSSION: Developing green businesses in the Bayview District of San Francisco.

DISCUSSION: Implementation of Existing Initiatives
- Solar Bonds
- Green Building
- Precautionary Principle
- Hydrogen City
- Electricity Resource Plan

Department of the Environment, City and County of San Francisco
11 Grove Street, San Francisco, CA 94102
Telephone: (415) 355-3700 • Fax: (415) 554-6393
Email: Monica.Fish@sfgov.org • www.sfenvironment.com

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DISCUSSION: Role of the Environment Commission:

- Programmatic Support
- Board of Supervisors
- Fund Raising
- Commission Liaisons to the Department of the Environment

DISCUSSION: Status of pending Commission legislation

DISCUSSION: Campaigns—Top five campaign ideas for Fiscal-Year 2005-06.

DISCUSSION: Budget Overview

INFORMATION: Commission Secretary's Report
Monica Fish, Commission Secretary

1. Communications & Correspondence

2. Update on Pending City Legislation

INFORMATION: President's Announcements

INFORMATION: New Business

PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

ADJOURNMENT

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506, (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org within three business days of a meeting.*

Disability Access

The Commission on the Environment's Retreat will be held at 111 Sutter Street, on the southwest corner of Sutter and Montgomery Streets. The meeting room is wheelchair accessible. The closest accessible BART station is the Montgomery Street station on Montgomery and Market Streets. Accessible MUNI lines serving this location are the F, 2, 3, 4, 6, and 7 lines. You may click on the following web link for more information about MUNI accessible services: **http://www.sfmuni.com/php/routelist.php** or by calling (415) 923-6142. There is accessible parking in the vicinity of 111 Sutter at public parking garages located at 161 Sutter and 233 Sutter Streets and at the Sutter Stockton garage located at 444 Stockton/330 Sutter Street.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call the Mayor's Office on Disability accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance
(Chapter 67 of the San Francisco Administrative Code)

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, Adele Destro, Interim Sunshine Task Force Administrator, City Hall, Room 409, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102-4683 at Phone No.: (415) 554-7724; Fax No.: (415) 554-7854; E-mail: sotf@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct Code §2.100, et. seq] to register and report lobbying activity. For more information about the Lobbyist Ordinance, please contact the Ethics Commission at: 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300, fax (415) 581-2317; web site at www.sfgov.org/ethics.

Important Information

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

NOTE: Persons unable to attend the meeting may submit to the Commission on the Environment, by the time the proceedings begin, written comments regarding the agenda items above. These comments will be made a part of the official public record and shall be brought to the attention of the Commission on the Environment members. Any written comments should be sent to: Commission Secretary of the Environment, 11 Grove Street, San Francisco, CA 94102 by 5:00 p.m. on the day prior to the hearing. Comments which cannot be delivered to the Commission Secretary by that time may be taken directly to the hearing at the location above.

When bringing handouts to meetings, please photocopy on both sides of the paper and try to use post-consumer recycled or tree-free paper. Also, please bring sufficient copies of handouts for the Commission, the Commission Secretary and the public.

Public Comment

At this time, members of the public may address the Commission on items of interest that are within the subject matter jurisdiction of the Commission but are not on today's agenda. Public comment will be taken following each agendized item. Each member of the public may address the Commission for up to three minutes, unless otherwise announced by the President. If it is demonstrated that the comments by the public will exceed 15 minutes, the President may continue Public Comment to another time during the meeting.

The Brown Act forbids the Commission from taking action or discussing any item or issue not appearing on the posted agenda. This rule applies to issues raised in public comment as well. In response to public comment, not on an agendized item, the Commission is limited to:

1. Briefly responding to statements made or questions posed by members of the public, or
2. Request staff to report back on a matter at a subsequent meeting, or
3. Directing staff to place the item or issue on a future agenda (Government Code Section 54954.2(a).)

Posted: March 22, 2005

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

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City and County of San Francisco
Commission on the Environment
SPECIAL MEETING - RETREAT

DRAFT MINUTES
Friday, April 8, 2005, 9:30 A.M. – 2:00 P.M.
111 Sutter Street, 20th Floor

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CALL TO ORDER AND ROLL CALL

The meeting was called to order at 9:55 a.m. Present: Commissioners Nia Crowder (President), Alan Mok, Arlene Rodriguez, and Johanna Wald. Excused/Absent: Commissioners Christina Desser, Paul Pelosi, Jr. and Angelo King.

ACTION: Adoption of Minutes of the March 22, 2005 Meeting.

Upon motion by Commissioner Rodriguez and second by Commissioner Mok, the March 22, 2005 meeting Minutes were unanimously adopted.

PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

There was no public comment at this time.

DISCUSSION: Public outreach to the community on environmental issues.

The Director commended the Commissioners and the Department Staff on their commitment and experience. A few points that were made:

- Building long-term relationships are most important with City government, residential and commercial sectors;
- The Department and the Commission have an impact nationally so it is important to choose initiatives selectively;
- Making sure that the initiatives the Department and Commission are working on are being implemented and have an impact.

DISCUSSION: Update on World Environment Day and discussion on Commissioners' role and participation in events.

A discussion was held on World Environment Day and its connection with the United Nations. The Director discussed the calendar of events including the delegate and VIP calendar, community events, workshops and tours. Commissioners were asked to attend all of the events that would fit into their schedule, especially the workshops and tours in order to answer community questions. The WED calendar would be sent to Commissioners to select and advise the Director/Commission Secretary of their availability. Department of the Environment Staff discussed the events, workshops, and tours they would be organizing. Recommendations were made to educate the community (1) that WED is an event that lasts for several days, not one day as the name suggests and (2) on the differences between Earth Day and WED.

DISCUSSION: Developing green businesses in the Bayview District of San Francisco

No discussion was held at this time.

DISCUSSION: Implementation of Existing Initiatives

Green Building: Mark Palmer, Green Building Coordinator discussed main accomplishments of the municipal green building program for 2004 that consisted of the Board of Supervisors unanimous adoption of the LEED solar amendment to the Green Building design principles and expanding the Resource Efficient Building Task Force to include more representation from San Francisco departments. The main goal for 2005 is implementation of the Ordinance. Several projects include:

- Continuation and expansion of a green building training program for City design professionals;
- Increasing outreach to City departments through a new Green Building newsletter;
- Continuing pilot projects set up in 1999 under the original Green Building Ordinance such as the Academy of Science LEED Platinum building and Laguna Honda Hospital;
- Implementation of new projects under the LEED Solar Ordinance;
- San Francisco Green Building Compliance Guide;
- Working with Treasure Island Development Authority on the Sustainability Plan and for the Island to become at least LEED Silver.

A discussion was held on (1) the amendment to the Tropical Hardwood/Redwood ban ordinance that is being worked on to allow the City to purchase hardwood and redwood materials only if they are Forest Stewardship Council-certified woods and (2) the possibility of creating an in-house building commission team to assess quality control of design and construction of buildings.

Laura Ingall, Green Building Coordinator for commercial and residential buildings discussed the potential endorsement of the Alameda County Guidelines for Residential Buildings (revised) as a model for California and an upcoming Resolution endorsing the guidelines once finalized.

Solar Bonds: Cal Broomhead, Energy Manager and Peter O'Donnell, Renewable Energy Coordinator discussed financing mechanisms and other issues surrounding solar installations in residential and non-residential buildings. A discussion was held on the viability of Propositions B and H that the voters passed in 2001 to authorize bond authority for solar and other renewables. Other topics discussed included: (1) the Duke Energy Settlement funds for solar installations in multi-family and low-income homes and (2) solar installations and neighbor property encroachments.

Electricity Resource Plan: Cal Broomhead, Energy Manager and Peter O'Donnell, Renewable Energy Coordinator gave an update on the Electricity Resource Plan. Topics included (1) increasing transmission; (2) combustion turbine facilities; (3) renewable energy (4) Generation Solar Program and solar hot water; (5) tidal wave project financing; and (6) energy efficiency program goals.

Hydrogen City: Director Jared Blumenfeld discussed the Resolution that created the Commission on the Environment's Hydrogen and Renewable Energy Committee. A discussion was held on California's "Hydrogen Highway" and plans for the Hydrogen Conference that will be held in San Francisco next year.

Precautionary Principle: Debbie Raphael, Toxic Reduction Program Manager discussed the Precautionary Principle Ordinance that was introduced at the Board of Supervisors meeting on April 5, 2005 and is under the 30-day rule. The Budget Analyst's Report will reflect the cost-effectiveness of the Ordinance. The Bay Area Working Group is working on getting local businesses involved. There will be a stakeholders group with the Department of the Environment, the Small Business Commission, the Human Rights Commission, Purchasing, and local small businesses to encourage them to learn about the ordinance.

DISCUSSION: Role of the Environment Commission

Programmatic Support: A discussion was held on how the Commission and the Department could communicate more with each other on upcoming programs, events, and other matters. Director Blumenfeld recommended that Commissioners be assigned to specific programs as a liaison. A recommendation was made to have a staff or Commission meeting and the Deputy City Attorney to discuss the process for how staff members and the Commissioners could legally interact in accordance with the Sunshine laws. A suggestion was made to create a Commission job description and discuss it at the Operations Committee meeting. A request was made to email the Commissioners senior staff meeting minutes.

Fund Raising: Shawn Rosenmoss, Fundraising Coordinator reported that the most important thing in fundraising is "telling the story"--knowing all the many things the department is working on and being able to talk about them. A request was made of the

Commissioners to provide the Department with their connections to other groups with whom the Department might want to collaborate on projects and seek funding. The Director reported that fund raising may become a requirement for each project/program manager in the future.

Board of Supervisors: No discussion was held at this time.

Commission Liaisons to the Department of the Environment: The following Commissioners were recommended as liaisons to Department of the Environment programs:

Commissioner Wald:	Recycling
Commissioner King:	Environmental Justice
Commissioner Rodriguez:	Toxics
Commissioner Crowder:	Energy
Commissioner Mok:	Fund Raising
Commissioner Desser:	Public Outreach and School Education
Commissioner Pelosi:	Clean Air

DISCUSSION: Status of pending Commission legislation

The list of pending Commission legislation was distributed to the Commission and available for review.

- The Construction and Debris Diversion Ordinances are ready to be introduced;
- The Supermarket Checkout Bag Nexus Study available by April 22;
- Mandatory Recycling for all sectors target date July 1, 2006, when the new garbage rates take effect;
- Food Service Ware Ordinance, food service businesses to use reusable and compostable ware.

No further discussion was held at this time.

DISCUSSION: Campaigns—Top five campaign ideas for Fiscal-Year 2005-06.

- Reduce Level of Pharmaceuticals in Sewers/Water
- Climate Action Plan
- Bio-Diesel Use
- Education Program—Connection between the Environment, Nature, and Nutrition for School Children K-5.
- Green Building at Slide Ranch
- Farmers Market in Bayview Outreach
- Janitorial Chemicals Contract for Bid due April 29 and Specs are on the Web
- Urban Wind Turbine at the Randall Museum for World Environment Day

A request was made for all event announcements to be emailed to the Commissioners.

DISCUSSION: Budget Overview

David Assmann, Deputy Director advised that the Department was previously reclassified to an Enterprise Department and then advised that it was not.

INFORMATION: Commission Secretary's Report
Monica Fish, Commission Secretary

- Communications & Correspondence
- Update on Pending City Legislation – A list of Department of the Environment's pending legislation was made available to the Commission.

No report was made at this time.

INFORMATION: President's Announcements:

No announcements were made at this time.

INFORMATION: New Business:

No new business was discussed at this time.

PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

There was no public comment at this time.

ADJOURNMENT

The meeting adjourned at 2:00 p.m.

Staff Attendance: Jared Blumenfeld, Director, David Assmann, Deputy Director, Cal Broomhead, Sushma Dhulipala, Monica Fish, Chris Geiger, Robert Haley, Tamar Hurwitz, Laura Ingall, Ann Kelly, Faiz Khan, Jack Macy, Sraddha Mehta, Peter O'Donnell, Mark Palmer, Debbie Raphael, Shawn Rosenmoss, Emily Utter, Mark Westlund, Becky Wike, and Marjaneh Zarrehparvar.

Respectfully submitted by,

Monica Fish, Commission Secretary

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

City and County of San Francisco
Commission on the Environment
SPECIAL MEETING - RETREAT

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APPROVED MINUTES
Friday, April 8, 2005, 9:30 A.M. – 2:00 P.M.
111 Sutter Street, 20th Floor

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CALL TO ORDER AND ROLL CALL

The meeting was called to order at 9:55 a.m. Present: Commissioners Nia Crowder (President), Alan Mok, Arlene Rodriguez, and Johanna Wald. Excused/Absent: Commissioners Christina Desser, Paul Pelosi, Jr. and Angelo King.

ACTION: Adoption of Minutes of the March 22, 2005 Meeting.

Upon motion by Commissioner Rodriguez and second by Commissioner Mok, the March 22, 2005 meeting Minutes were unanimously adopted.

PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

There was no public comment at this time.

DISCUSSION: Public outreach to the community on environmental issues.

The Director commended the Commissioners and the Department Staff on their commitment and experience. A few points that were made:

- Building long-term relationships are most important with City government, residential and commercial sectors;
- The Department and the Commission have an impact nationally so it is important to choose initiatives selectively;
- Making sure that the initiatives the Department and Commission are working on are being implemented and have an impact.

DISCUSSION: Update on World Environment Day and discussion on Commissioners' role and participation in events.

A discussion was held on World Environment Day and its connection with the United Nations. The Director discussed the calendar of events including the delegate and VIP calendar, community events, workshops and tours. Commissioners were asked to attend all of the events that would fit into their schedule, especially the workshops and tours in order to answer community questions. The WED calendar would be sent to Commissioners to select and advise the Director/Commission Secretary of their availability. Department of the Environment Staff discussed the events, workshops, and tours they would be organizing. Recommendations were made to educate the community (1) that WED is an event that lasts for several days, not one day as the name suggests and (2) on the differences between Earth Day and WED.

DISCUSSION: Developing green businesses in the Bayview District of San Francisco

No discussion was held at this time.

DISCUSSION: Implementation of Existing Initiatives

Green Building: Mark Palmer, Green Building Coordinator discussed main accomplishments of the municipal green building program for 2004 that consisted of the Board of Supervisors unanimous adoption of the LEED solar amendment to the Green Building design principles and expanding the Resource Efficient Building Task Force to include more representation from San Francisco departments. The main goal for 2005 is implementation of the Ordinance. Several projects include:

- Continuation and expansion of a green building training program for City design professionals;
- Increasing outreach to City departments through a new Green Building newsletter;
- Continuing pilot projects set up in 1999 under the original Green Building Ordinance such as the Academy of Science LEED Platinum building and Laguna Honda Hospital;
- Implementation of new projects under the LEED Solar Ordinance;
- San Francisco Green Building Compliance Guide;
- Working with Treasure Island Development Authority on the Sustainability Plan and for the Island to become at least LEED Silver.

A discussion was held on (1) the amendment to the Tropical Hardwood/Redwood ban ordinance that is being worked on to allow the City to purchase hardwood and redwood materials only if they are Forest Stewardship Council-certified woods and (2) the possibility of creating an in-house building commission team to assess quality control of design and construction of buildings.

Laura Ingall, Green Building Coordinator for commercial and residential buildings discussed the potential endorsement of the Alameda County Guidelines for Residential Buildings (revised) as a model for California and an upcoming Resolution endorsing the guidelines once finalized.

Solar Bonds: Cal Broomhead, Energy Manager and Peter O'Donnell, Renewable Energy Coordinator discussed financing mechanisms and other issues surrounding solar installations in residential and non-residential buildings. A discussion was held on the viability of Propositions B and H that the voters passed in 2001 to authorize bond authority for solar and other renewables. Other topics discussed included: (1) the Duke Energy Settlement funds for solar installations in multi-family and low-income homes and (2) solar installations and neighbor property encroachments.

Electricity Resource Plan: Cal Broomhead, Energy Manager and Peter O'Donnell, Renewable Energy Coordinator gave an update on the Electricity Resource Plan. Topics included (1) increasing transmission; (2) combustion turbine facilities; (3) renewable energy (4) Generation Solar Program and solar hot water; (5) tidal wave project financing; and (6) energy efficiency program goals.

Hydrogen City: Director Jared Blumenfeld discussed the Resolution that created the Commission on the Environment's Hydrogen and Renewable Energy Committee. A discussion was held on California's "Hydrogen Highway" and plans for the Hydrogen Conference that will be held in San Francisco next year.

Precautionary Principle: Debbie Raphael, Toxic Reduction Program Manager discussed the Precautionary Principle Ordinance that was introduced at the Board of Supervisors meeting on April 5, 2005 and is under the 30-day rule. The Budget Analyst's Report will reflect the cost-effectiveness of the Ordinance. The Bay Area Working Group is working on getting local businesses involved. There will be a stakeholders group with the Department of the Environment, the Small Business Commission, the Human Rights Commission, Purchasing, and local small businesses to encourage them to learn about the ordinance.

DISCUSSION: Role of the Environment Commission

Programmatic Support: A discussion was held on how the Commission and the Department could communicate more with each other on upcoming programs, events, and other matters. Director Blumenfeld recommended that Commissioners be assigned to specific programs as a liaison. A recommendation was made to have a staff or Commission meeting and the Deputy City Attorney to discuss the process for how staff members and the Commissioners could legally interact in accordance with the Sunshine laws. A suggestion was made to create a Commission job description and discuss it at the Operations Committee meeting. A request was made to email the Commissioners senior staff meeting minutes.

Fund Raising: Shawn Rosenmoss, Fundraising Coordinator reported that the most important thing in fundraising is "telling the story"--knowing all the many things the department is working on and being able to talk about them. A request was made of the

Commissioners to provide the Department with their connections to other groups with whom the Department might want to collaborate on projects and seek funding. The Director reported that fund raising may become a requirement for each project/program manager in the future.

Board of Supervisors: No discussion was held at this time.

Commission Liaisons to the Department of the Environment: The following Commissioners were recommended as liaisons to Department of the Environment programs:

Commissioner Wald:	Recycling
Commissioner King:	Environmental Justice
Commissioner Rodriguez:	Toxics
Commissioner Crowder:	Energy
Commissioner Mok:	Fund Raising
Commissioner Desser:	Public Outreach and School Education
Commissioner Pelosi:	Clean Air

DISCUSSION: Status of pending Commission legislation

The list of pending Commission legislation was distributed to the Commission and available for review.

- The Construction and Debris Diversion Ordinances are ready to be introduced;
- The Supermarket Checkout Bag Nexus Study available by April 22;
- Mandatory Recycling for all sectors target date July 1, 2006, when the new garbage rates take effect;
- Food Service Ware Ordinance, food service businesses to use reusable and compostable ware.

No further discussion was held at this time.

DISCUSSION: Campaigns—Top five campaign ideas for Fiscal-Year 2005-06.

- Reduce Level of Pharmaceuticals in Sewers/Water
- Climate Action Plan
- Bio-Diesel Use
- Education Program—Connection between the Environment, Nature, and Nutrition for School Children K-5.
- Green Building at Slide Ranch
- Farmers Market in Bayview Outreach
- Janitorial Chemicals Contract for Bid due April 29 and Specs are on the Web
- Urban Wind Turbine at the Randall Museum for World Environment Day

A request was made for all event announcements to be emailed to the Commissioners.

DISCUSSION: Budget Overview

David Assmann, Deputy Director advised that the Department was previously reclassified to an Enterprise Department and then advised that it was not.

INFORMATION: Commission Secretary's Report

Monica Fish, Commission Secretary

- Communications & Correspondence
- Update on Pending City Legislation – A list of Department of the Environment's pending legislation was made available to the Commission.

No report was made at this time.

INFORMATION: President's Announcements:

No announcements were made at this time.

INFORMATION: New Business:

No new business was discussed at this time.

PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

There was no public comment at this time.

ADJOURNMENT

The meeting adjourned at 2:00 p.m.

Staff Attendance: Jared Blumenfeld, Director, David Assmann, Deputy Director, Cal Broomhead, Sushma Dhulipala, Monica Fish, Chris Geiger, Robert Haley, Tamar Hurwitz, Laura Ingall, Ann Kelly, Faiz Khan, Jack Macy, Sraddha Mehta, Peter O'Donnell, Mark Palmer, Debbie Raphael, Shawn Rosenmoss, Emily Utter, Mark Westlund, Becky Wike, and Marjaneh Zarrehparvar.

Respectfully submitted by,

Monica Fish, Commission Secretary

Adopted: July 27, 2005

CITY AND COUNTY OF SAN FRANCISCO

COMMISSION ON THE ENVIRONMENT

GAVIN NEWSOM
MAYOR

JARED BLUMENFELD
DIRECTOR

NIA CROWDER
PRESIDENT

CHRIS DESSER
COMMISSIONER

ANGELO KING
COMMISSIONER

ALAN MOK
COMMISSIONER

PAUL PELOSI, JR.
COMMISSIONER

ARLENE RODRIGUEZ
COMMISSIONER

JOHANNA WALD
COMMISSIONER

MONICA FISH
MISSION SECRETARY

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NOTICE OF CANCELLATION

The **Tuesday, May 24, 2005** regularly scheduled meeting of the Commission on the Environment has been cancelled. The next regular meeting is **scheduled for Tuesday, July 26, 2005 at 5:00 p.m. at City Hall, 1 Dr. Carlton B. Goodlett Place, Room 416.** An agenda will be provided 72 hours prior to the meeting. Please contact the Department of the Environment Commission Secretary, Monica Fish, at 415-355-3709 or Monica.Fish@sfgov.org if you would like to be placed on the agenda list. An agenda may also be accessed on the website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506.

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Telephone (415) 355-3709 ■ Fax 554-6393 ■ E-mail: Monica.Fish@sfgov.org ■ Website: www.sfenvironment.com

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

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City and County of San Francisco
Commission on the Environment

Notice and Meeting Agenda
Tuesday, July 26, 2005, at 5:00 p.m.
City Hall, Room 416

Commission Members: Commissioners Nia Crowder, President, Paul Pelosi, Jr., Vice President, Christina Desser, Angelo King, Alan Mok, Arlene Rodriquez, and Johanna Wald.

Commission Secretary: Monica Fish

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ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

2. **ACTION:** Adoption of Minutes of the April 8, 2005 Special Meeting Retreat. (Explanatory Documents: Draft Minutes of the April 8, 2005 Special Meeting Retreat)**

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

4. **INFORMATION:** Update on Supermarket Checkout Bag Issues.
Sponsor: Commissioner Johanna Wald
Speaker: Staff: Robert Haley, Recycling Program Manager

5. **PRESENTATION:** Refuse Rate Process Overview.
Sponsor: Commissioner Christina Desser
Speaker: Staff: Robert Haley, Recycling Program Manager

6. **PRESENTATION:** Interim Annual Report for the Integrated Pest Management (IPM) Program (Explanatory Documents: San Francisco Integrated Pest Management Program 2003 Annual Report and Graph--Pesticide Use in San Francisco)
Sponsor: Director Jared Blumenfeld
Speakers: Staff: Debbie Raphael, Toxics Reduction Program Manager and Chris Geiger, City Toxics Reduction Coordinator

7. **INFORMATION:** Implementation Report on the Arsenic Treated Wood Ordinance (Explanatory Documents: Implementation Report on the Arsenic Treated Wood Ordinance; Chapter 13 Environment Code; Supporting Attachments and Cover Letter to Board of Supervisors)

Sponsor: Director Jared Blumenfeld
Speaker: Staff: Debbie Raphael, Toxics Reduction Program Manager

8. **PRESENTATION:** Draft Treasure Island Sustainability Plan (Explanatory Documents: Treasure Island Draft Sustainability Plan and LEED Gold Standard).

Sponsors: Commissioners Johanna Wald and Arlene Rodriguez
Speaker: Staff: David Assmann, Deputy Director and *Jack Sylvan, Mayor's Office of Workforce & Economic Development-Base Reuse*

9. **INFORMATION:** Commission Secretary's Report

Monica Fish, Commission Secretary

- Communications and Correspondence

  Discussion of Hydrogen and Renewable Energy Committee meeting dates and City Hall meeting room availability.

  Confidential Commission and Staff Phone List

  Sunshine Ordinance Task Force Survey

  2005 Good Government Guide

  Commission Secretary Vacation

- Update on Pending City Legislation

  Urban Forest Council: Public Works Code - significant trees, landmark trees, and penalties for violations legislation.

10. **INFORMATION:** Hydrogen and Renewable Energy Committee Report

- Commissioner Crowder will review the agenda for the upcoming Special Meeting on August 29, 2005, rescheduled from August 3, 2005.

11. **INFORMATION:** Operations Committee Report

- Chair's Report: Commissioner Pelosi will highlight the May 4, 2005 Special and July 20, 2005 Regular Meetings. The next Regular Meeting is scheduled for Wednesday, October 19, 2005 at 4:00 p.m. at the Department of the Environment, Ground Floor Conference Room.

12. **INFORMATION:** Policy Committee Report

- Chairs Report: Commissioner Wald will highlight the April 28, 2005 and June 23, 2005 Meetings. The next Regular Meeting on Thursday, July 28, 2005 has been cancelled. The next Regular Meeting will be held on Thursday, August 25, 2005 at 5:00 PM at City Hall, Room 421.

13. INFORMATION: Director's Report

- Jared Blumenfeld, Director, Department of the Environment will give updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division.

14. INFORMATION: President's Announcements

15. INFORMATION: New Business

16. FUTURE AGENDA ITEMS

17. PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

18. ADJOURNMENT

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at *http://sfgov.org/site/sfenvironment_meeting.asp?id=15506*, (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at *Monica.Fish@sfgov.org* within three business days of a meeting.

Public Comment

At this time, members of the public may address the Commission on items of interest that are within the subject matter jurisdiction of the Commission but are not on today's agenda. Public comment will be taken following each agendized item. Each member of the public may address the Commission for up to three minutes, unless otherwise announced by the President. If it is demonstrated that the comments by the public will exceed 15 minutes, the President may continue Public Comment to another time during the meeting.

The Brown Act forbids the Commission from taking action or discussing any item or issue not appearing on the posted agenda. This rule applies to issues raised in public comment as well. In response to public comment, not on an agendized item, the Commission is limited to:

1. Briefly responding to statements made or questions posed by members of the public, or
2. Request staff to report back on a matter at a subsequent meeting, or
3. Directing staff to place the item or issue on a future agenda (Government Code Section 54954.2(a).)

Disability Access

The Commission on the Environment meetings are generally held in the Civic Center area. Please see the agenda for exact meeting location. The Commission meeting rooms are wheelchair accessible. The closest accessible BART station is the Civic Center Station at United Nations Plaza and Market Street. Accessible MUNI lines serving this location are: #71 Haight/Noriega and the F Line to Market and Van Ness and the Metro Stations at Van Ness and Market and at Civic Center. For information about MUNI accessible services call (415) 923-6142. There is accessible curbside parking adjacent to City Hall on Grove Street and Van

Ness Avenue and in the vicinity of the Veterans Building at 401 Van Ness Avenue adjacent to Davies Hall and the War Memorial Complex.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call the Mayor's Office on Disability accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance (Chapter 67 of the San Francisco Administrative Code)

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, Adele Destro, Interim Sunshine Task Force Administrator, City Hall, Room 409, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102-4683 at Phone No.: (415) 554-7724; Fax No.: (415) 554-7854; E-mail: sotf@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct Code §2.100, et. seq] to register and report lobbying activity. For more information about the Lobbyist Ordinance, please contact the Ethics Commission at: 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300, fax (415) 581-2317; web site at www.sfgov.org/ethics.

Important Information

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

NOTE: Persons unable to attend the meeting may submit to the Commission on the Environment, by the time the proceedings begin, written comments regarding the agenda items above. These comments will be made a part of the official public record and shall be brought to the attention of the Commission on the Environment members. Any written comments should be sent to: Commission Secretary of the Environment, 11 Grove Street, San Francisco, CA 94102 by 5:00 p.m. on the day prior to the hearing. Comments which cannot be delivered to the Commission Secretary by that time may be taken directly to the hearing at the location above.

When bringing handouts to meetings, please photocopy on both sides of the paper and try to use post-consumer recycled or tree-free paper. Also, please bring sufficient copies of handouts for the Commission, the Commission Secretary and the public.

Posted: July 20, 2005

SF Environment
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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: July 26, 2005 **ITEM NO. 6**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

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***This list reflects the explanatory documents provided.**

City and County of San Francisco Integrated Pest Management Program

2003 Program Report

SF *Environment*

11 Grove Street, San Francisco, CA 94102
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San Francisco Department of the Environment
Integrated Pest Management Program

INTERIM REPORT 2003

Covering pesticide use data from calendar year 2003
and program activities July 1-December 31, 2003

Debbie Raphael, Toxics Reduction Manager
Chris Geiger, City Toxics Reduction Coordinator
Deanna Simon, City Toxics Reduction Associate

Executive Summary

Pesticide use by San Francisco City Departments has generally continued the downward trend that began with the institution of the Integrated Pest Management Program in 1996. Total pesticides used have fallen by 72-82% (pounds and gallons, respectively) since 1996, with the most popular herbicide (Roundup®) falling by 91% in that period (lbs. of active ingredient). The use of the most toxic Tier I products has declined from approximately 70% to 42% of total use since 1999, when the Tier system was instituted. However, new efforts to control rodents – especially rats – have caused a significant increase in rodenticide use. Rodenticides and golf course herbicides account for most Tier I pesticide use in the City.

Throughout 2003, San Francisco's Integrated Pest Management Program continued to play an active role in reducing pesticide use and pesticide hazards. The program conducted integrated pest management (IPM) trainings for client departments, organized an annual IPM conference, reviewed and updated the City's Reduced-Risk Pesticides List, supported new reduced-risk product-testing, and held monthly meetings of the IPM Technical Advisory Committee, which includes representatives from all major City pesticide users. Other local and state agencies frequently requested information and expertise from San Francisco's IPM Program, an established leader in this field.

Future challenges for the IPM Program include a re-evaluation of the City's rodent management approaches and improvements to the pesticide use reporting system. Also, beginning in 2004, both program activities and pesticide use will be reported by calendar year, at the request of the Commission on the Environment. This interim report on pesticide use covers all pesticide use in the year 2003 for City of San Francisco properties, and program activities for the second half of 2003 only.

Report

Introduction

Chapter 3, Section 305(g) of the Environment Code (Integrated Pest Management Ordinance) requires San Francisco's Department of Environment to report on the progress of its Integrated Pest Management (IPM) Program to the Board of Supervisors. This report is submitted to fulfill that requirement, and summarizes the progress made by San Francisco's IPM Program from July through December, 2003. Included in this information is an analysis of pesticide use data from the calendar year 2003. We have presented this data as a citywide analyses together with specific information for each of the City's seven "big users" of pesticides from 1996 through the end of 2003.

This is an interim report, covering only the last six months of calendar year 2003. In the past, IPM reports have included program activities for fiscal year, but pesticide use data from the previous calendar year, which sometimes proved confusing. It was determined by the Commission on the Environment (January, 2004 meeting) to move to a reporting system based on calendar year for both pesticide use and programmatic activities.

Reduced-Risk Pesticides List

San Francisco's Reduced-Risk Pesticide List (RRPL) represents the pesticide products approved for use under San Francisco's Integrated Pest Management Ordinance (Adopted 10/96, Chapter 3, San Francisco Environmental Code). The list is updated on an as-needed basis to reflect the availability of new reduced risk products and the removal of products with the greatest human health and environmental concern. Products are designated as Allowed (A), Limited Use (L), and Limited Use of Special Concern (L*). Each limited-use product notation is accompanied by the specific circumstances under which it is approved for use. These restrictions are in addition to product label stipulations, which are required by state and federal law.

Integrated Pest Management (IPM) Programs apply a number of elements to control pests while ensuring a safe working and play environment. *Chemical pesticides represent only a single control strategy and are used only as a last resort.* Sanitation, other pest prevention measures, and non-chemical management approaches should all be implemented first. If these measures prove insufficient to control a pest, then the RRPL products may be utilized as tools, according to the restrictions specified for each pesticide product. Other products may be used only by exemption (see "Exemptions" section below).

Four key points about San Francisco's list deserve emphasis:

- **A pesticide list is not an IPM program.** Pesticides should be the last resort, when all other tactics have failed.
- **This list is for institutions, not residents.** Many pesticides on the list were added for specialized purposes not found in residential settings. Homeowners will usually need few or no pesticides to successfully manage common pest problems.
- **Fewer listed products is not necessarily better.** IPM programs require a toolbox of alternatives, for example, alternative attractants in least-toxic ant baits. Therefore, a larger list is indicative of the diversity of pest problems encountered, and does not imply that pesticide use is higher. The important measures of success are: Amount of highly toxic pesticides actually used, and overall effectiveness in pest suppression.
- **The SF RRPL only applies to City and County of San Francisco departments and properties.** Cities are only legally empowered to regulate their own pesticide use, not the pesticide use of residents or businesses.

Table 1 summarizes the changes made in the 2004 RRPL. For more information on the creation of this list, see the *Guide to the City of San Francisco's Reduced-Risk Pesticide List*, on the web at www.sfenvironment.org under "Least-Toxic Pest Management."

Table 1. Summary of 2004 Reduced-Risk Pesticide List changes (numbers of products)

	L* **Limited Use, Special Concern** (*Highest concern*)	**L** **Limited Use** (*Medium concern*)	**A** **Allowed** (*Lowest concern*)	**Total**
Pesticides added to 2003 list	0	9	1	10
Pesticides removed from 2003 list	4	5	4	13
Number of products on 2004 list	**7**	**48**	**28**	**83**

Exemptions

Under the IPM Ordinance, SFE has the responsibility of reviewing and granting exemptions for the use of pesticides not listed on the Reduced Risk Pesticide List. Applicants must demonstrate that they have made a good-faith effort to find alternatives to the banned pesticide, that effective, economic alternatives to the banned pesticide do not exist for the particular use, and that they have developed a reasonable plan for investigating alternatives to the banned pesticide during the exemption period. Exemptions may be granted as “trial,” “regular,” or “emergency” exemptions:

- ***Trial exemptions*** are granted for the purpose of testing products that show promise as less hazardous alternatives.
- ***Regular exemptions*** are considered for the purpose of managing rare or unforeseen pest problems that cannot be adequately controlled using products on the Reduced-Risk Pesticide List.
- ***Emergency exemptions*** are permitted under the IPM ordinance when a “pest outbreak poses an immediate threat to public health or significant economic damage will result from failure to use a pesticide” on the Reduced-Risk Pesticide List.

SFE received six exemption requests during the second half of 2003 (Table 2). Of these, five were approved. Three of the six exemptions were trial exemptions.

Table 2. Summary of exemptions requested, July 1-December 31, 2003

Date Requested	Dept	Product	Type	Signal Word	Active Ingredient	Pest	Status
8/12/03	Rec&Park	Talstar CA	Regular	Caution	Bifenthrin	sansevieria scale on orchids, plus brown scale and orchid aphid	DENIED
8/22/03	PUC Water	CB-80 Extra	Regular	Caution	Pyrethrins, piperonyl butoxide	mosquito adulticide	APPROVED
9/12/03	Rec&Park	GC-Mite	Trial	Exempt	Cottonseed, clove and garlic oils	mites	APPROVED
9/12/03	Rec&Park	Matran 2	Trial	Exempt	Clove Oil	weeds	APPROVED
9/12/03	SFIA	GB-1111	Regular	Caution	Aliphatic Petroleum Hydrocarbon	mosquito larvicide	APPROVED
11/14/03	Rec&Park	Rode-trol	Trial	Exempt	Corn oil, dried corn cobs	ground squirrels	APPROVED

Pesticide Use Data Collection and Analysis

Pesticide use data collection is currently accomplished using a customized Microsoft Access database. Pesticide users in various City departments have "satellite" versions of this database, which they use to feed data into the central SFE database. This arrangement has worked fairly well, but is challenging to keep up to date. Frequent changes in US EPA registration numbers, product names, treatment location codes, and other data will increase database maintenance challenges in the future. In the next year, IPM staff will work with the City Dept. of Telecommunication and Information Services to improve these databases – see "Future Directions" section below.

An important measure of the success of the City's IPM program is the frequency with which pest problems can be resolved without the use of any chemical controls. In 2002, SFE and the City's primary pest control contractor, Pestec, began experimenting with tracking the number of site visits that did NOT result in pesticide use. 2003 data shows that the majority of structural (i.e. in and around buildings) pest control visits involved prevention, monitoring, physical, and mechanical methods as opposed to chemical control (baits or sprays). In fact, 53% of these visits did not require application of a pesticide (see Fig. 10 in the Citywide section), a 3% decrease over last year's rate. This data shows that Pestec uses chemicals as a last resort, not as a generic solution.

Contract Development

All structural pest control is conducted by outside contractors except in the Department of Recreation and Parks. In the second half of 2003, SFE continued to work with the City Office of Contract Administration to include specific language and expertise for the new Request for Qualifications (RFQs) and Request for Bids (RFBs) for Citywide structural pest control.

Training /Conferences

Key to the City's successful implementation of its IPM program is the ongoing training of City staff at all levels. SFE staff has been working with City Departments to organize, coordinate and provide a variety of training opportunities. Most training events are free of charge to participating departments and funded from the SFE IPM budget. Listed below is a summary of these training events, emphasizing those in the second half of 2003:

Technical Advisory Committee (TAC) Meetings: Each month a Technical Advisory Committee Meeting convenes to exchange information and discuss current pest control techniques, and representatives from the seven "big user" departments meet to discuss implementation of the IPM program. Most meetings feature a speaker on technical subjects of interest to the group. Participants include departmental IPM Coordinators, safety and environmental compliance staff, pest control contractors, independent IPM experts, and community members. The City Toxics Reduction Coordinator from SFE chairs these meetings and sets the agendas.

Topics in the second half of 2003 included guest speakers on the following:

- June-Bug Away Bugs (pest repellent trash bags), Ed Katz, Steed Marketing; and Spare the Air, Jim Smith, BAAQMD
- July- The SF Transition from Chlorine to Chloramines, Jim Solerno Water Quality Bureau and Lillian Brown SFPUC
- August- Secondary kill from rodenticides, Terry Salmon UCSD
- September- West Nile Virus Update, Helen Zverina and Jack Breslin SFDPH
- October- Using Goats to Control Weeds in Sensitive Areas, Living Systems Land Management staff
- November- Gardening for Wildlife, Don Mahone Strybing Arboretum nursery
- December- No meeting due to holiday schedules

Site Specific Workshops and Training: SFE worked with several departments to offer pesticide safety training to their staff serving as pesticide applicators. SFE staff also schedule special trainings and arrange for continuing education credit issued by the California Department of Pesticide Regulation.

Training sessions held in 2003 are summarized:

January 2003 – December 2003
Monthly IPM Technical Advisory Committee Meetings
2 hours each, 8 sessions, 16 hours total
Approximately 20-25 attendees each month

January 2003-December 2003
Field Trips (in lieu of monthly meetings)
2 trips, 5 hours each, total of 10 hours
Approximately 12 attendees per trip

January 2003
Annual IPM Conference
7 hours total
250 attendees

April 2003
Recreation and Parks Pesticide Use Safety Training
2 session of 4 hours each, 8 hours total
Approximately 200 staff trained
April 2003
Public Utilities Commission Pesticide Use Safety Training
2 session of 4 hours each, 8 hours total
Approximately 80 staff trained
June 2003
Propane Weed Torch Safety and Use Training
2 hours total
20 staff trained
July 2003
Mosquito Abatement Trainings
2 full-day workshops, 7 hours each, 14 hours total
Approximately 60 staff trained

Summary of trainings - 2003

Full day trainings:	*3*
Half-day trainings:	*6*
2-hour trainings:	*9*

Total number of trainings = 18 trainings ranging from 2 hours to all day.
Total person-hours of trainings = 5,390 person-hours

Additionally, the SFE IPM Program worked with the Dept. of Recreation and Parks to put on a series of sustainable landscape workshops for San Francisco City gardeners. Topics discussed at the workshops included:

- Best Plants for Drought and Wind Tolerance and Habitat Needs
- Design Dialog
- Pollinator Planting
- Managing Volunteers
- Latest and Greatest Technologies in the Fight Against Weeds
- Environmental Education Workshop
- Composting and Recycling at McLaren Park
- Permaculture Field Trip

SFE will continue to work with the Departments to identify training needs and opportunities.

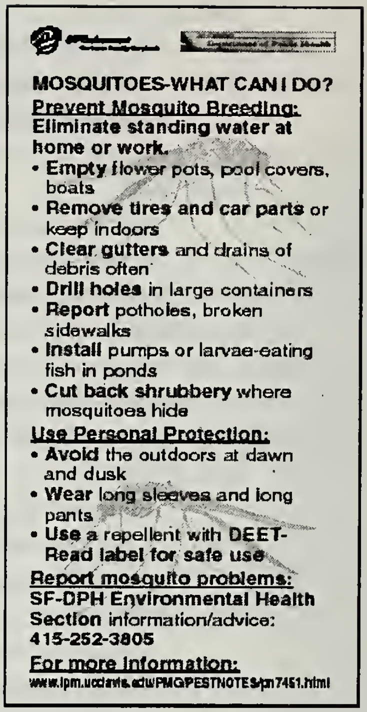
Community and Regional Outreach

Web Site: The IPM section of the website is the most commonly visited part of the Dept. of the Environment web site (www.sfenvironment.org), and people tend to go directly to the pests section. The website is used to assist City Departments and the public with new information on such topics as bed bugs and the West Nile virus.

Urban Pesticide Committee: IPM Program staff actively participated in meetings of the Urban Pesticide Committee, an interagency group organized by the Regional Water Quality Control Board to address pesticide runoff issues.

Written Materials: .

- *Water bill insert on mosquito biology and breeding habits (see side box):* A collaborative effort of SFE, SF Dept. of Public Health. and PUC.
- *Mosquito and West Nile virus information package:* Developed by IPM Program with publications from in-house and outside sources.



MOSQUITOES-WHAT CAN I DO?

Prevent Mosquito Breeding:

Eliminate standing water at home or work.

- **Empty** flower pots, pool covers, boats
- **Remove tires and car parts** or keep indoors
- **Clear gutters** and drains of debris often
- **Drill holes** in large containers
- **Report** potholes, broken sidewalks
- **Install** pumps or larvae-eating fish in ponds
- **Cut back shrubbery** where mosquitoes hide

Use Personal Protection:

- **Avoid** the outdoors at dawn and dusk
- **Wear** long sleeves and long pants
- **Use** a repellent with **DEET-Read label for safe use**

Report mosquito problems:

SF-DPH Environmental Health Section information/advice:
415-252-3805

For more information:

www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7451.html

- *Homeowner's Pest Fact Sheet (English and Chinese):* Developed by IPM Program in coordination with the SFE Household Hazardous Waste Program, for distribution at one-day HHW collection events and other IPM outreach events.
- *It! Guides (Control It!, Grow It!):* SFE continues to work with PUC to make sure the It! Guides (Control It!, Grow It!, etc…) are available to interested people through our EcoCenter and at other community events.
- *City IPM Newsletter*: Members of the IPM TAC requested that SFE create a citywide newsletter that publicizes the IPM Program to City employees. Newsletters reach additional staff members not able to take advantage of the SFE TAC meetings, training and conferences. The first edition was created in June 2003 and TAC members will work on improving it to suit their needs (see Attachment B).

The IPM Program has also developed two new outreach materials for distribution at the Flower and Garden Show, Household Toxics Collection days, Recreation and Park plant sales and outreach events, and to school children through our school education program. Materials recently developed:

- *"Chip Clip"* to seal up food bags
  Message: "Snap Your Snacks: Your Crumbs are a Bug's Banquet".
- *Bookmark with embedded seeds to grow plants attractive to beneficial insects*
  Message: "It's a Bug Eat Bug World" and "Spraying kills the good bugs too", plus basic good bug identification

Progress by City Departments

Port of San Francisco – The Port hired an additional gardener in 2003. SFE and the City IPM Consultant worked with Port staff to develop an IPM Demonstration Pilot Program to test the effect of mycorrhizal fungi inoculation on plant health. In addition, the Port was awarded a Toxics Reduction Grant by SFE to purchase a wood chipper for creating chipped mulch material to reduce weeds. Extensive areas have been mulched with chips, with reported results including increased soil health, reduced weeds, and less erosion.

Department of Public Works – The Department of Public Works has reorganized its landscaping operations and is reviewing and updating its IPM Plan. SFE and the City IPM Consultant worked with DPW to develop an IPM Demonstration Pilot Project to showcase the use of weed fabric, bark mulch, and xeriscape plants in median strips and sidewalk plantings. Project areas remain healthy, meet meridian vegetation requirements, and continue to need minimal or no maintenance.

SFE has also worked with the DPW Urban Forestry program to achieve its IPM goals. This included the re-introduction of RoundUp use in road median areas with tall weed growth, where hand-weeding or weed-whacking would present a danger to workers. These areas, in order of priority, will be converted to weed cloth and mulch plantings, per the Demonstration Pilot Project, as time and funds allow.

Department of Recreation and Parks – The Department of Recreation & Parks re-opened the Conservatory of Flowers, the remodel of which included pest management design such as rooms for isolation of infested plants, screened vents, and pond design that facilitates cleaning and maintenance.

SFE has been working with R&P staff to address several challenges this year, including Sharp Park rodent control; use of compost tea, EM1, compost, and mulch/bark chips on golf courses and other areas; mosquito control, and the introduction of several weed species into high-profile turf areas. SFE will continue to assist R&P staff to implement alternative IPM methods with assistance ranging from coordination with Norcal to secure compost to research and training on new and alternative methods. The R&P IPM Team has continued their leadership in exploring new, reduced-risk pest management methods and continues to be a leader in this regard.

Department of Public Health – Laguna Honda Hospital has been actively using IPM during the preconstruction phase of remodeling. A coordinated IPM and Green Building effort will continue throughout the construction and post-construction phases. SF General Hospital has made a special effort to avoid any pesticide use due to the possible sensitivities of its immune-suppressed patients, and conducts all of its weed control efforts manually or using soap products. SF Environment has been working closely with General Hospital's gardening and IPM staff to ensure compliance with the IPM Ordinance, reaching out with more trainings, and making a special effort to ensure DPH staff are invited to all presentations. In addition, SFE has brokered unprecedented cooperation among DPH and other City departments to address the concerns of mosquito management and West Nile Virus prevention, cooperated with DPH in creating and distributing education and outreach materials, and helped identify areas of improvement in DPH's Citywide mosquito management plans.

Department of Transportation (MUNI) – Coaches and facilities have incorporated IPM techniques in identifying pests and in choosing control alternatives. While rat management efforts and rodenticide use have increased significantly percentagewise, the general levels of pesticide use by MUNI remains quite low.

Public Utilities Commission – The PUC has been experimenting with the use of goats on pipeline rights-of-way, especially in residential areas where other techniques (such as burning or herbicides) might prove objectionable. They have also increased their use of mechanical weed controls, and decreased use of Roundup. Mosquito controls have increasingly emphasized elimination of habitat and use of least-toxic larvicides when necessary. Amounts of pesticides used has leveled off after dramatic reductions earlier in the program. Herbicide use has steadily decreased, while rodenticides and mosquito treatments have increased.

San Francisco International Airport – SFIA has seen major expansion in recent years, without corresponding increases in landscape staffing. As a result, herbicide use has begun to creep upward again after early reductions. Mosquito larvicide use—mostly microbial Tier III products—has increased considerably due to concerns over mosquito-vectored diseases. Coordination of multiple pest control efforts by numerous independent contractors remains a challenge at SFIA.

Annual Report Notes

The trends noted in this report are drawn from pesticide use data collected by the big seven City departments and the Citywide pest control contractor since the passage of the Integrated Pest Management Ordinance in 1996.

San Francisco utilizes a system for evaluating the toxicity of pesticides developed by Dr. Philip Dickey of the Washington Toxics Coalition. SFE considers this approach to be an example of "anticipatory action to prevent harm," as required by the City's Precautionary Principle Ordinance (SF Environment Code, Chapter 1). This system allows the City to look beyond the signal word and acute toxicity of a product and instead evaluate pesticides for such factors as chronic effects (i.e. cancer, reproductive harm), environmental effects (i.e. persistence, bioaccumulation, mobility, water quality), and non-target effects (i.e. impact on wildlife, bees). Using these criteria, products are grouped into tiers with Tier I being the most toxic, Tier II as products of medium toxicity, Tier III as least toxic, and Tier IV products not having enough information for evaluation. It is interesting to note that many of the products from Tier 1 carry a signal word of "Caution" (least acute toxicity). This illustrates the problem with relying on the signal word on a pesticide product label to select pesticides in an IPM program.

The goals of the SF IPM program are to effectively manage pests, emphasize prevention and non-chemical controls, and in so doing to reduce both the amount and toxicity of pesticides used. However, measuring the success of an IPM program is a complex task. Before drawing conclusions from pesticide use statistics, it is important to consider these factors:

- **Long-term trends are more important than short-term.** Pesticide use always varies somewhat from year to year due to weather, pest pressure, special renovation projects, or other factors. An change in pesticide use from the previous year does not necessarily indicate a long-term trend.
- **Exposure potential is as important as toxicity in determining risk.** A key aim of a pest management program is the reduction of risk. Risk is primarily determined by two factors: Toxicity (for example, how much chemical is required to impair a human or other animal) and exposure (for example, how much of the chemical is likely to actually reach a human or other animal). This means that the formulation and use of the products is all-important. For

example, pesticides applied as aerosol sprays have much higher exposure potential—and therefore pose a greater risk—than pesticides encased in tamperproof bait boxes.

- **Pounds and gallons used can be deceptive.** Use statistics expressed in pounds and gallons mask the specific products used, and do not necessarily reflect levels of risk posed by pesticides. For example, some products—such as elemental sulfur fungicide, or corn gluten meal—may be relatively nontoxic, but require high application rates to be effective. Another factor not illuminated by overall use statistics is the varying amount of active ingredient (ai) in different formulations. For example, Vanquish (ai=dicamba 57%) and Proturf New KOG Weed Control (ai=dicamba 0.07%) both contain the same active ingredient, but Vanquish is a concentrate.
- **Administrative/budget impacts are also important.** Increases in the number of buildings or outdoor acres maintained, decreases in landscaping staff, or underfunding can increase the pressure for "quick fix" pesticide spraying, instead of long-term, preventative, IPM solutions. Converseley, maintenance delayed (for example, by budgetary restraints) can lead to more serious problems in the future.
- **Ineffective pest management also poses risks.** West Nile virus transmitted by mosquitoes, allergies or asthma caused by cockroaches, and enteric diseases spread by rats are a few examples of hazards posed by pests themselves. It is important to remember that San Francisco's IPM Program has dual aims: Reduction of pesticide hazards and effective pest management.
- **These data do not represent residential or commercial pest management trends.**

Future Activities

Change of report coverage: *This is an interim report*, covering only the last six months of calendar year 2003. In the past, IPM reports have included program activities for fiscal year, but pesticide use data from the previous calendar year, which sometimes proved confusing. It was determined by the Commission on the Environment (January, 2004 meeting) to move to a reporting system based on calendar year.

Database improvements: Planned improvements include:

- Improved tracking of exemption requests.
- Standardization of several fields to improve reporting
- Improved ability to track pesticide use based on pounds of *active ingredient* used. This is a much more informative approach than simply reporting pounds of product used.
- Improved ability to track pesticide use based on Hazard Tier, Use Category (A, L, L*), pesticide type (herbicide, fungicide, etc...), and SF City Approved status.
- Streamlined report generation

Pesticide use data collection and analysis improvements: Plans for the future improvement of non-chemical pest control tracking are in the works, and we hope to implement a system where we can identify specific non-toxic actions such as sanitation, trapping, mechanical weed control, exclusion, and more.

Citywide Pesticide Use Trends

General trends

Table 3. Key Citywide Pesticide Use Statistics

Since the beginning of the IPM Program in 1996:

72% reduction (lbs. of product) **82% reduction** (gals. product)	Total pesticide use since 1996, excluding rodenticides
91% reduction (lbs. of active ingredient)	Glyphosate (Roundup® active ingredient) use since 1996
103% increase (lbs. of product)	Rodenticide use since 1996

Since 1999 (Beginning of Tier system):

37% reduction (lbs. of product) **66% reduction** (gals. of product)	Tier I (highest toxicity) total pesticide (including rodenticides in pounds, not gallons)
28% reduction (% of total use)	Tier I percentage of total pesticides used (in pounds + gallons); from 70% in 1999 to 42% in 2003

Since last year (2002):

34% reduction (lbs. of product) **42% reduction** (gals. of product)	Total pesticide use since 2002, excluding rodenticides
42% increase (lbs. of product) **170% increase** (gals. of product)	Tier I (highest toxicity) total pesticide use since 2002
71% reduction (lbs. of active ingredient)	Glyphosate (Roundup® active ingredient) use since 2002
28% decrease (lbs. of product)	Rodenticide use since 2002

The most consistent overall trend is the sharp decrease in pesticide use in the beginning of the program, an increase over the next few years through 1999, 2000, 2001, and a decrease since then. It is important to note that the Integrated Pest Management Ordinance, when first implemented, was misunderstood and misapplied. Many departments simply eliminated pesticide use at first, causing very low pesticide use numbers for the first year of the program. However, because the sudden decrease in pesticide use was not replaced with other management efforts, pest populations (weeds, insects, and vertebrates) built up over that period. Once this situation was understood, IPM Program staff worked with City staff to explore less-toxic products and alternative techniques that could effectively control pests. Hence, the increased pesticide use between 1997 and 1999 reflects an adjustment period when City staff brought runaway pest populations back under control, while adapting and developing less-toxic techniques. Because we did not track pesticide use before the ordinance, we cannot know if the increase reached back to previous levels or remained lower than in the past.

As the program has grown and matured, we have successfully worked with pest managers to use smaller quantities of pesticide products, in more directed applications, and only when other options (such as preventive measures or cultural, mechanical, and biological controls) have been exhausted. Trial and error, along with gradual testing of new products and methods has led to the overall decrease in amount of pesticides used over the past few years. Citywide pesticide use records in San Francisco from 1996 through 2002 indicate a decrease in general pesticide use (Figs. 1&2), lower quantities used per application (Fig. 3), and a 91% decrease in Roundup® herbicide use (Fig. 4). Tier I products, those with the highest toxicity concerns, are steadily decreasing in both solid and liquid formulations (Fig. 5). The increase in lower risk Tier II and Tier III products (most of which have a "Caution" label) parallels the Tier I decrease, indicating the steady replacement of more toxic products with less toxic alternatives (Figs. 6&7). The sharp decrease in amount used per application (Fig. 3) is indicative of our move from broadcast to highly targeted applications. Because of renewed attention to rat management throughout the city, rodenticide use is one area where a decrease is not expected, resulting in increased rodenticide use (Figs. 8&9). Overall use of liquid pesticide formulations is decreasing citywide (Figs. 12&13). This reflects the movement away from sprays and toward the use of baits. This is considered a positive result, since the use of baits considerably reduces the potential for human exposure.

Structural pest control

The majority of structural pest control (i.e. in and around buildings) is performed by the City's pest control contractor, Pestec. The exception is structural pest control at the San Francisco International Airport which is done by another contractor, Applied Pest Management. This year's list of pests include bed bugs, cockroaches, fleas, mosquitoes (larvae and adult), spiders, silverfish, ants, rats and mice, gnats and flies/maggots, ticks, wasps, gophers, pigeons, cats, and dead animals.

Prevention, monitoring, and nonchemical control options should constitute the core of a true IPM program. In the case of San Francisco's structural IPM, more than half (53%) of Pestec's visits in 2003 did not require application of a pesticide (Fig. 10). However, this percentage has decreased over the last 2 years (82% in 2001 and 56% in 2002), due largely to Pestec's increase in mosquito control efforts for catch basins and at water treatment facilities. Additionally, Pestec has been doing an increasing amount of rodent (especially rat) control for which baits are often used.

Rodenticide use on the rise due to more concerted control efforts

Rodenticides accounted for about 68% of the overall citywide

An Important Note on Rodenticides:

Single-feeding products have higher toxicity concerns due to elevated concentrations of active ingredient in the target pest at a given time (ie: if it is eaten, the predator is more likely to be adversely affected). Multiple-feeding products administer smaller amounts of active ingredient to the target pest, but are used over a longer time to achieve the same control results, therefore decreasing the risk of secondary toxicity to non-target predatory animals. Therefore, products with less concern over secondary toxicity must be used in larger quantities to achieve results (rodent control). This may skew the picture of rodenticide use in the City. Please keep this in mind when viewing the increasing use of rodenticides over recent years, as it often reflects not only increased vertebrate management efforts, but also the move toward potentially less toxic products (which by nature need to be used in larger quantities).

pesticide use in 2003 (Fig. 8), and—along with turf herbicides and fungicides—account for the majority of the City's Tier I and Tier II product use. Rodenticide use has increased due to a renewed effort to control long-standing rodent problems.

The rodenticides active ingredient of greatest concern is brodifacoum, which is found in the most commonly used rodenticide for City property pest control in 2003 (Table 4, Fig. 9). There are emerging concerns over secondary toxicity of brodifacoum, that is, hazards to non-target predatory animals consuming dead or dying pest species. However, most of this chemical was used to control rats in areas where chances of secondary toxicity are very low (such as under sewer access covers or covered catch basins). With an active ingredient percentage of 0.005%, the 512 total pounds of product containing brodifacoum (down from 681 in 2002) amounts to 0.0256 pounds, or 0.41 ounces of this chemical used Citywide in 2003. Despite this seemingly low amount, secondary toxicity concerns documented recently by the US EPA warrant a move to safer, effective alternatives. In consultation with the IPM TAC, we have removed most products containing brodifacoum from the updated 2004 reduced risk pesticide list. Use of products with this active ingredient are therefore expected to decrease to zero over the next two years as existing product stores are used up replaced with alternative products.

Table 4. Top rodenticide products used in 2003

Product	HazTier	Lbs.Used	Active Ingredient	Act.Ing. lbs
Weatherblok bait with bitrex	I	512.0994	brodifacoum 0.005%	0.0256
Ditrac super-size blox	II	496.75	diphacinone 0.005%	0.0248
Eaton's all-weather bait blocks rodenticide	II	415.625	diphacinone 0.005%	0.0208
Eaton's answer for the control of pocket gophers	II	369.125	diphacinone 0.005%	0.0185
Maki mini block	I	284.625	bromadiolone 0.005%	0.0142
Generation mini blocks	IV	95.0625	difethialone 0.0025%	0.0024
Contrac all-weather blox	I	65.5625	bromadiolone 0.005%	0.0033
JB Eaton Top Gun All Weather BaitBlock	II	30.5625	bromethalin 0.01%	0.0031

Glyphosate (*RoundUp, Rodeo*) use levels off as alternative methods increase

The herbicide glyphosate has gained a high profile due more to its overuse than to its actual toxicity. The wholesale use of the product on genetically engineered, glyphosate-resistant crops has made "Roundup" a household word. However, the downstream effects of such high-volume use—particularly on aquatic ecosystems—are still unclear, and the precautionary principle suggests that safer weed control methods should be used whenever possible.

San Francisco has experienced a consistent downward trend in the use of *RoundUp* products, which has decreased by 91% since 1996 (lbs. of active ingredient – see Fig. 4). The use of dry formulations has accounted for a relatively minor portion of total use, although City staff, especially Recreation and Parks Department, are increasing their use of the dry product due to toxicity concerns related to inert ingredients in the liquid version. Additionally, the solid formulations of products containing glyphosate can help to decrease spills, reduce the difficulty of cleanup, and reduce worker exposure due to splashing and contamination of container covers.

Much of the decrease in glyphosate-containing products is due to staff moving away from broadcast applications and increasing spot applications. Additional strategies that have contributed to this decrease in glyphosate use include: the use of weed fabric and bark mulches to inhibit weed growth; pressure-washing sidewalk cracks to remove soil and seeds, improvements to plant health to out-compete weed species; increases in hand weeding, weed whacking, and mowing to control vegetation; re-evaluating and decreasing pesticide use in areas where weeds are present but do not need to be controlled; and redefining some previous weeds as "groundcover" or "ornamental". For example, English daisies were removed from park turf in the past, but are now allowed to grow as ornamentals (except on golf courses, where they interfere with golfers' ability to locate errant balls).

Rodeo® Aquatic Herbicide has the same active ingredient (glyphosate) as Roundup®, and its use has decreased dramatically to 3.7 gallons in 2003. This is encouraging, as a major ecological concern of glyphosate is toxicity to nontarget aquatic plants and their associated animal communities.

Much of the RoundUp used in 2002 and 2003 was at the Harding-Fleming Golf Course. A major golf course renovation project in 2002 used herbicides to rid the course of kikuyu grass in order to reduce herbicide use for this weed in the future. Though it has worked and kikuyu remains under control at the course, other weeds have invaded and must be controlled to maintain the high standards required by the PGA Tournament to be held there. (See Rec & Park section below).

The trends in the data show that the City may be leveling off in the total amount of RoundUp used on City property (Fig. 11). The use of spray herbicides is difficult to reduce in dangerous areas such as street and highway medians, where safety concerns are such that City staff must spend as little time in those areas as possible. Further reductions may be possible for other uses, such as sidewalk and pavement cracks, and spot weeding in City parks. The primary barrier to reducing RoundUp use is the additional staff time required for some mechanical controls. In many instances, City Departments may need additional time and monetary resources to achieve significant further reductions without decreasing the quality of their weed-management efforts. Also, the ongoing expansion of the San Francisco International Airport is expected to increase herbicide in coming years (see "SFIA" section of this report for more information).

Highest toxicity products on the decline while lowest risk product use increases

In general, the City is moving away from the most toxic pesticide products and is instead choosing products that are safer for the environment and public health (Figs. 5,6&7). The use of products labeled with the signal word of Danger (greatest acute toxicity) has been totally eliminated on city property. The organophosphate insecticides diazinon and chlorpyrifos—known surface water contaminants that are the subjects of numerous federal and state pesticide reduction programs—have baeen completely eliminated in City operations.

Dry products labeled as Warning decreased until 2002 (96 lbs) but are up 383% to 464 lbs in 2003 (Fig. 12). This is due to increased use of Proturf New K-O-G Weed Control herbicide on high-profile turf areas (see "Recreation and Parks Department" section). Liquid formulations of both Caution- and Warning-labeled products have decreased since 1996 (97% reduction in Warning, 77% reduction Caution). This trend toward dry formulations is expected to continue as the City moves further toward the use of bait products, which have less potential for human exposure than liquid sprays.

It is important to remember is that the "Caution, Warning, Danger" system offers limited information, as it is only based on acute human health effects. Although relevant for some product uses, it is of less concern when exposure potential or the amount of active ingredient is low, for example, in self-contained baits. In such cases other measures of toxicity are of more concern, and the "Caution, Warning, Danger" proves inadequate for decision-making.

The San Francisco IPM Program therefore created a tier-rating system to more fully evaluate pesticide hazards. This categorization, developed by Dr. Philip Dickey, additionally takes into account the product's environmental and chronic human health effects, allowing us to evaluate a pesticide based on multiple factors (see the report, "Guide to San Francisco's Reduced-Risk Pesticide List," on the SFE website under "Innovative Programs/Least Toxic Pest Management/Reduced-Risk Pesticide List. Or go directly to the URL at: http://www.sfenvironment.com/aboutus/innovative/ipm/pest_list05/Approved_List_Guide.pdf) Using this information, a tier ranking is assigned, with Tier I products being of highest concern, and Tier III carrying the lowest risk. The tier system does not take exposure potential into account; this consideration is very situation specific and is accounted for in the "Use Limitations" section of the Reduced Risk Pesticide List (Attachment A) as well as on a case-by-case basis by City staff.

The tier rating system was not implemented until 1999, when we evaluated all products in use at that time. Tier I product use may therefore be underreported previous to 1999, since those are the products we were most likely to eliminate in the first years of the program. For this reason, we have only analyzed data collected since 1999.

However, it is significant to note that the use of Tier I pesticide products has declined by 37% in dry amounts and 66% in liquid amounts over the time we have been tracking these classifications (Fig. 5). The overall amount of Tier I products used is up from last year due to increased use of Proturf New K-O-G weed control on high-profile greens (see "Recreation and Parks Department" section) and several rodenticides used citywide. The dry Tier II products have increased due to large increases in rodent management efforts (Figs. 6&8) while use of liquid formulations has remained approximately stable. Finally, dry Tier III pesticide products have increased by 663% while liquid Tier III products have remained approximately stable (Fig. 7). This increase in the least toxic product category (Tier III) is encouraging, as it shows that Departments are testing and using safer, reduced risk, alternative products over traditional, more toxic ones.

Excluded data: Some data that would skew the picture are not included in analyses

The numbers reported (except in Fig. 1) exclude the use of Bioweed and Suppressa (both herbicides using corn gluten meal as an active ingredient). The use of these Tier III products requires unusually large quantities of material, skewing the graphs. Bioweed was used only in 2000 before its use was discontinued (the large amounts needed were not feasible). The use of Suppressa is on the decline as well. Because this product is food grade and 100% non-toxic, we feel comfortable excluding these outlier numbers from our reports in general.

Citywide Pesticide Use Graphs

Figure 1.

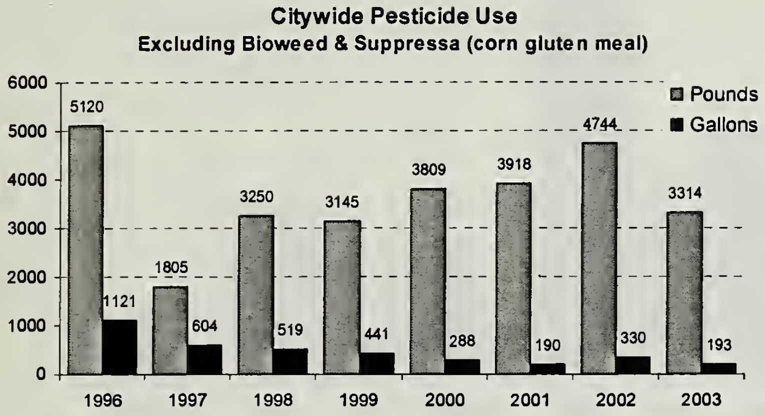


Figure 2.

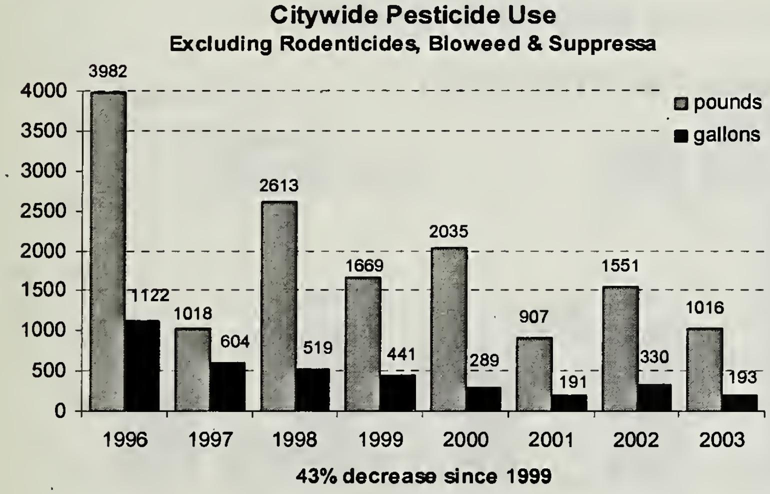


Figure 3. Average amount of pesticide per application

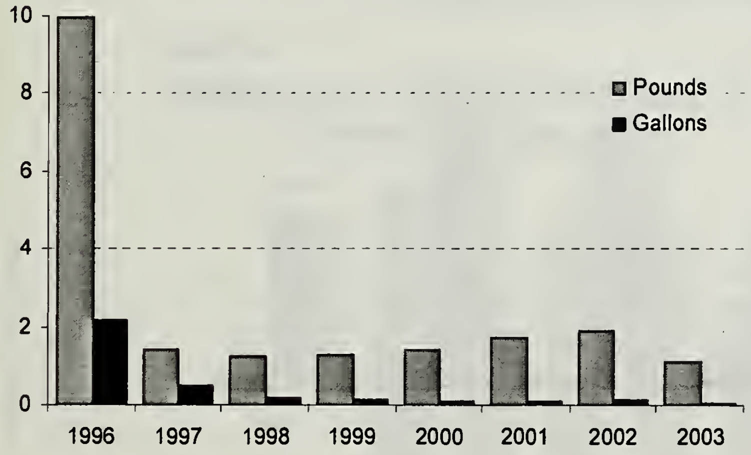
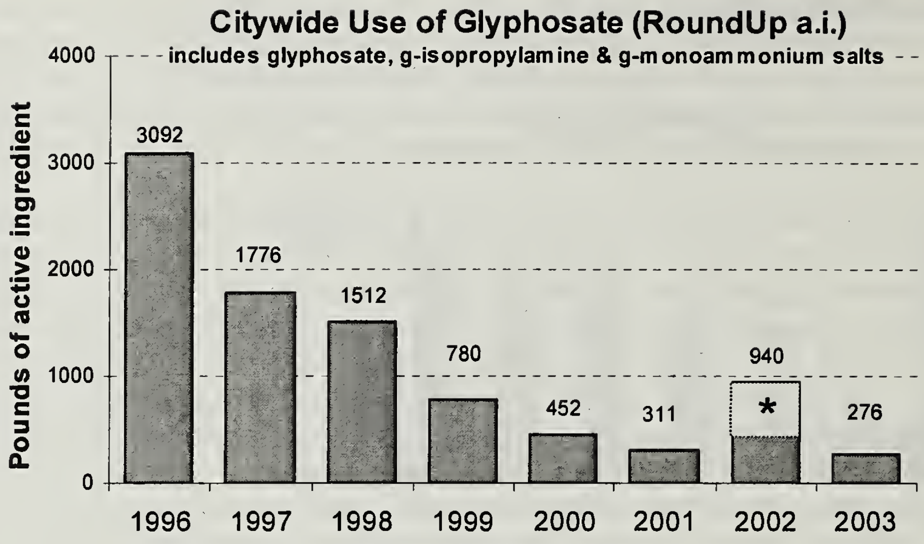


Figure 4


Citywide Use of Glyphosate (RoundUp a.i.)

includes glyphosate, g-isopropylamine & g-monoammonium salts

91% decrease since 1996

* = golf course rennovation

Figure 5 (includes rodenticide use)

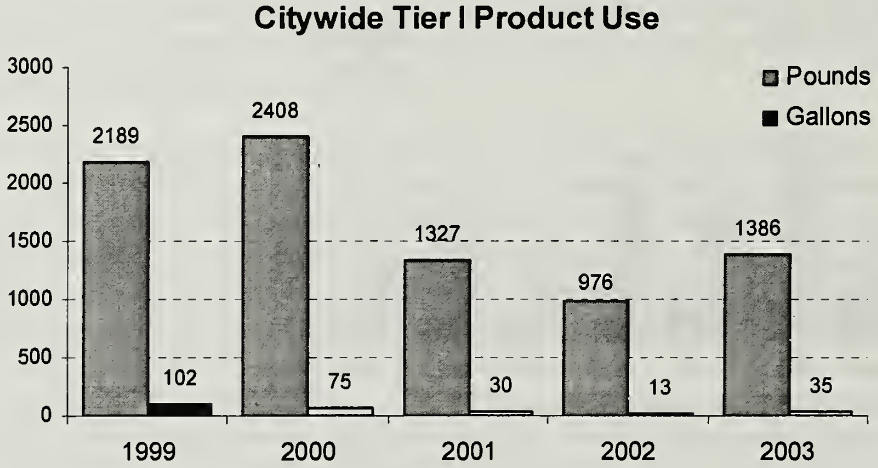

Citywide Tier I Product Use

Figure 6

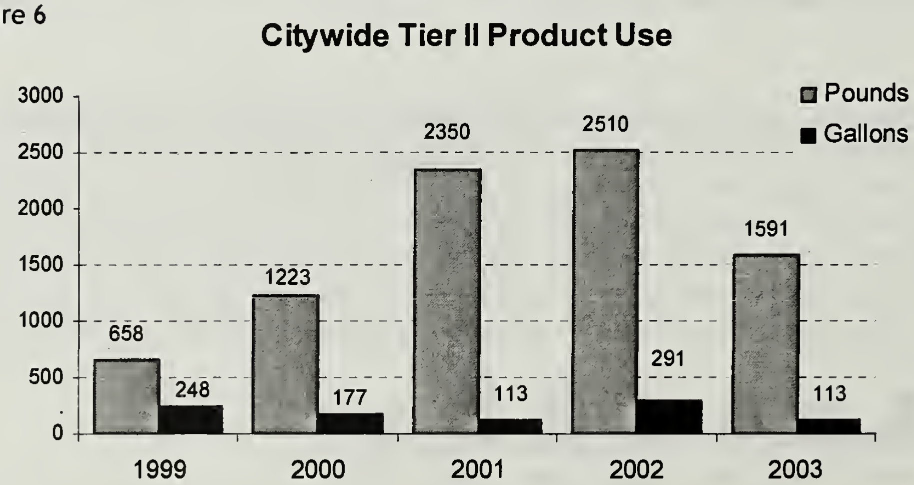

Citywide Tier II Product Use

Figure 7

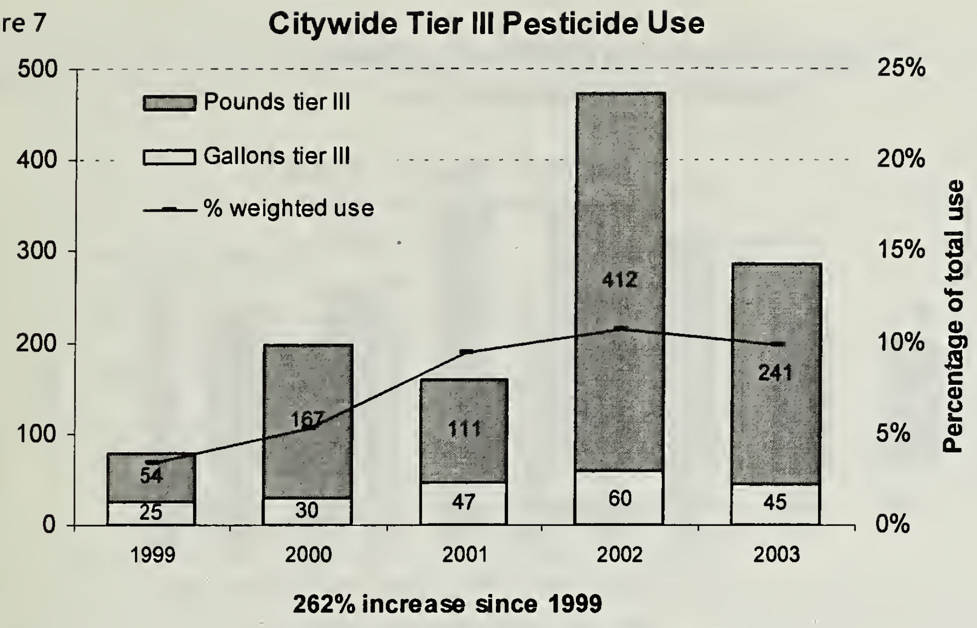


Figure 8

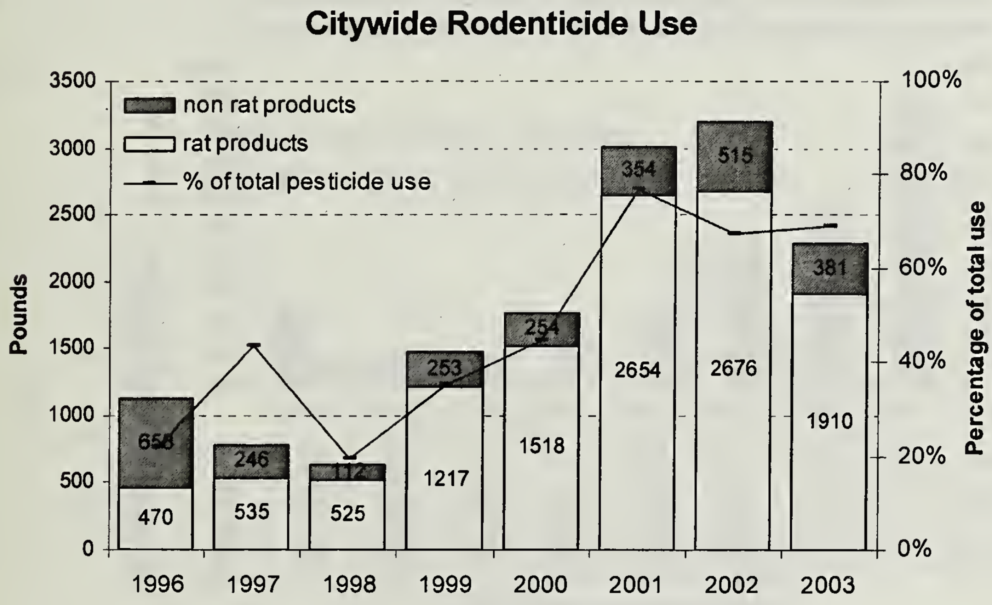


Figure 9

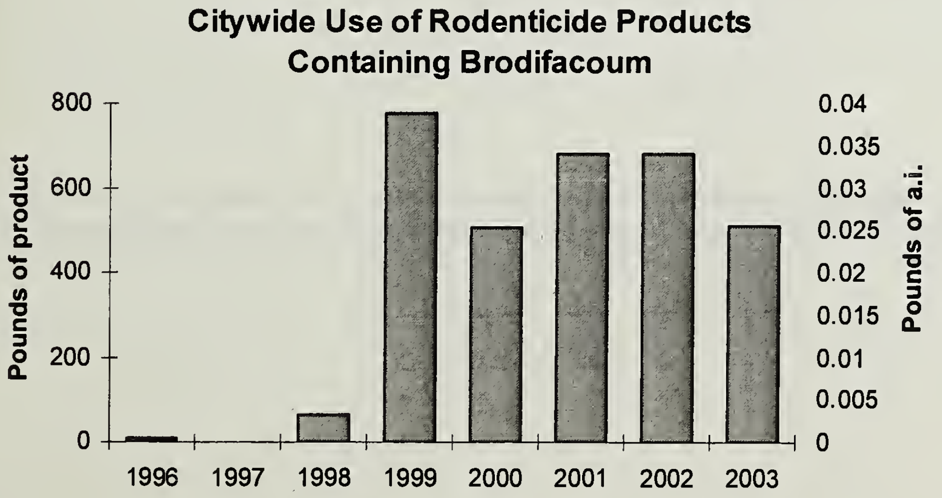


Figure 10

Percent Structural Pest Control Visits Requiring No Pesticide Use

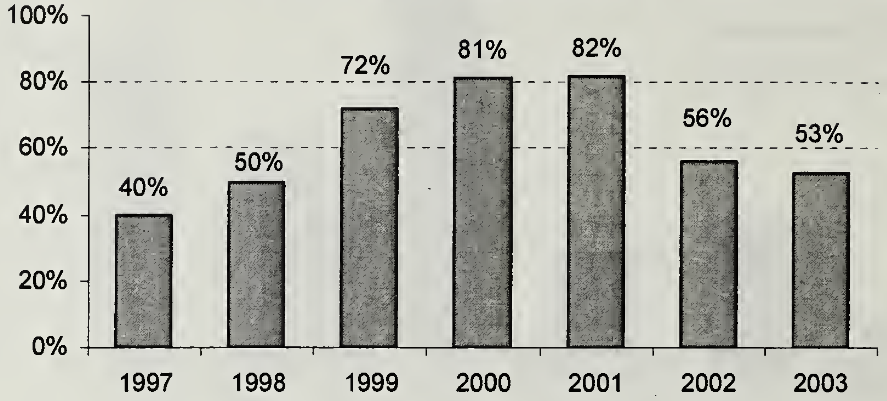
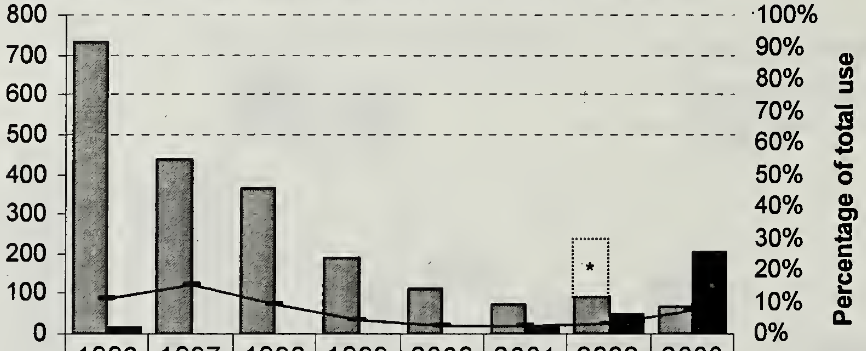


Figure 11

Citywide Use of Glyphosate (RoundUp products)
(includes Rup, RUdry, RUdry pack, RUPro, RUProDry, Rodeo Aquatic)

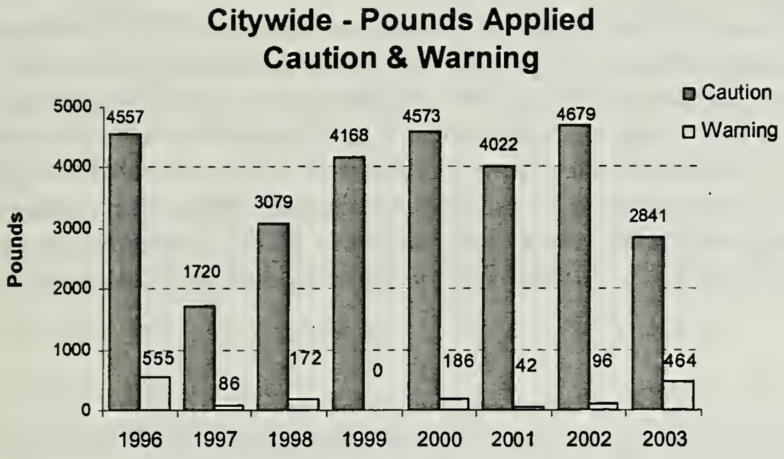


	1996	1997	1998	1999	2000	2001	2002	2003
▨ gallons	733	434	365	190	111	75	94	67
■ pounds	13	0.4	0.4	1.7	1.6	15.9	50.3	204
—— % of use	11%	15%	9%	4%	3%	2%	3%	7%

65% decrease since 1999

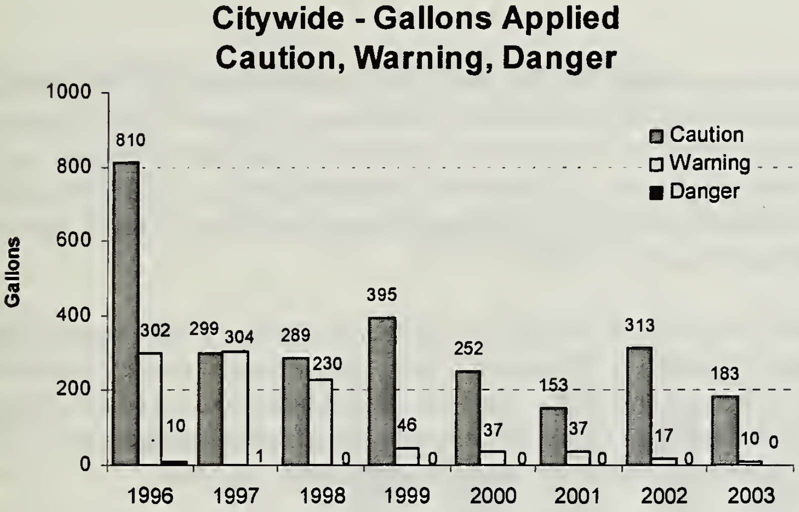
*140 gals for golf course renovation brings 2002 use to 234 gals

Figure 12



Zero pounds of danger product applied

Figure 13



*Caution, Warning, and Danger refer to the signal word placed on the pesticide product label. The signal word reflects a measure of acute toxicity as defined by the Environmental Protection Agency.

Department of Public Health

Trends in Amounts Used:

The Department of Public Health (DPH) exhibits similar trends as other City Departments, but poor records in the early years of the program render those data unreliable (Table 5, Fig. 14). Overall pesticide use remained fairly stable over the last four years (a time of improved record keeping), despite a decrease in numbers of applications. Liquid pesticide products (ie: sprays) have seen a dramatic and consistent decrease from 63 gallons in 1996 to less than one gallon in recent years. The amount of dry formulation pesticides jumped in 1999 and has remained high due to the rat abatement program for the sewers being overseen by DPH, although a decease of 29% was seen between 2002 and 2003. No use of RoundUp herbicide products were reported in 2003 by DPH (Fig. 16).

Rodenticide Use:

Rodenticides account for 375 pounds of the 391 pounds of pesticides used by DPH in 2003. The most commonly used rodenticide product contains the active ingredient brodifacoum. Because of increasing concerns over secondary poisoning of non-target predatory animals associated with brodifacoum, SFE is working with DPH to reduce or eliminate the use of this product in the future (Fig. 15).

Trends in Toxicity:

The quantity of Tier I products used by DPH has decreased by 36% since 1999 (Fig. 17). Much of the Tier I product was in the form of rodenticides, which have large amounts of inactive, food attractant ingredients causing their total weight to be very heavy compared to the amount of active ingredient used. For example, the 372 pounds of Weatherblok Bait with Bitrex used in 2003 amounts to a total of 0.0186 pounds—or 0.30 ounces—of brodifacoum used, since the percentage of active ingredient is only 0.005%.

A very minor contributor to Tier I use by DPH is ant control products. These products are either contained in bait stations or dispensed in inaccessible areas, presenting very opportunity for exposure. As with rodenticides, ant baits often have low percentages of active ingredients, and additionally are used in small quantities (typically less than an ounce per application). The overall risk of ant baits to humans or nontarget animals is therefore very low.

Tier II products, containing many lower-risk alternatives (most with a Caution label), are on the rise due to increased mosquito control efforts (Fig. 18). Applications of the lowest risk Tier III products—used exclusively for mosquito control—have increased over the past two years (Fig. 19). With DPH's increasing attention toward mosquito management, further increases are expected.

Mosquito Control:

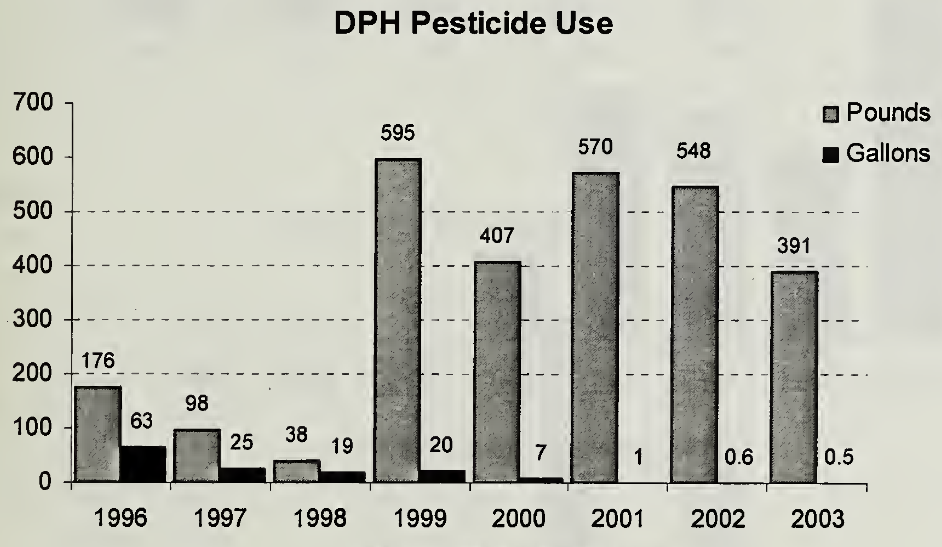
DPH has a cooperative agreement with the California State Department of Health Services for mosquito control throughout San Francisco. With the spread of West Nile Virus to the Bay Area, their responsibilities have increased. In addition to other city departments taking part in mosquito management, DPH is also increasing the use of mosquito larvicides. Documentation of this use has been minimal in the past, and accurate tracking began only this year.

Table 5. Pesticide Products Used by Department of Public Health in 2003

Product	Hazard Tier	EPA Reg Number	Amnt Used
Altosid briquets	II	2724-375-ZA-64833	9.0156 lbs
Weatherblok bait with bitrex	I	10182-339-AA-10182	372.4875 lbs
Gopher Getter Type 2 bait by Wilco	II	36029-50003-AA-36029	2.75 lbs
Vectolex G Biological mosquito larvicide	III	275-77-AA-275	2.7313 lbs
Maxforce Roach Killer Bait Gel	II	64248-14	2.6294 lbs
Trifluralin (aka Niban bait)	II	64405-2-AA-64405	0.9375 lbs
MAXFORCE ROACH BAIT F.05	II	64248-11	0.4394 lbs
Maxforce IBF4 Carpenter Ant Bait	II	64248-21.	0.2013 lbs
TERRO California ant killer	II	149-8-AA-149	0.1125 lbs + 0.4977 gals
Maxforce prof. insect control granules	II	64248-6-ZA-64248	0.0625 lbs
Sun spray ultra-fine spray oil	I	862-23-AA-53219	0.0391 gals
Agnique MMF	III	53263-28	0.0348 gals
Safer insecticidal soap conc.	III	42697-1-ZA-42697	0.0195 gals

Department of Public Health - Pesticide Use Graphs

Figure 14



64% increase since 1996
29% decrease over last year

Figure 15

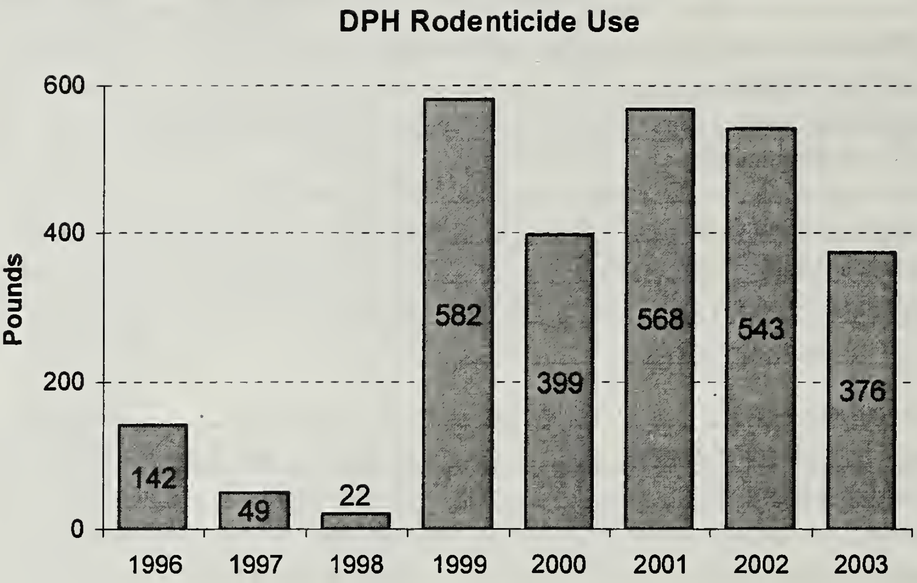
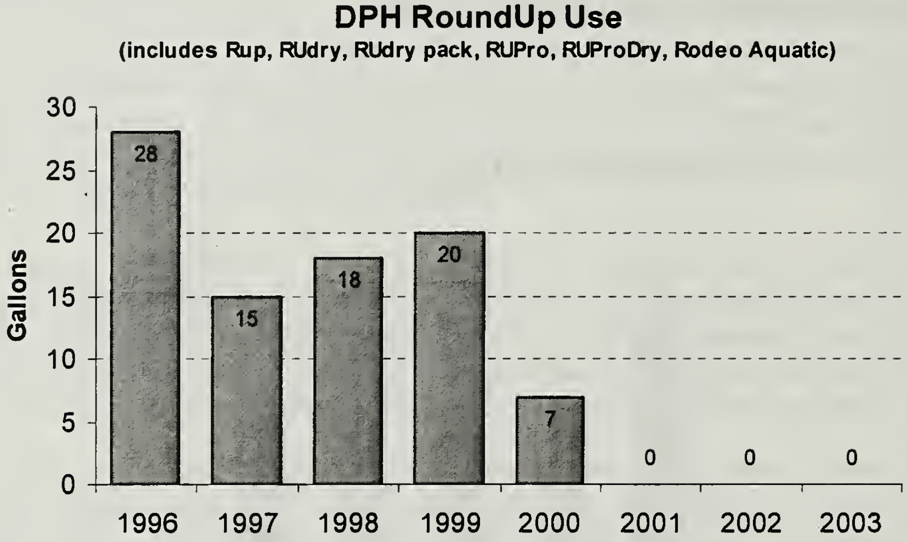


Figure 16



100% decrease since 1996

Figure 17

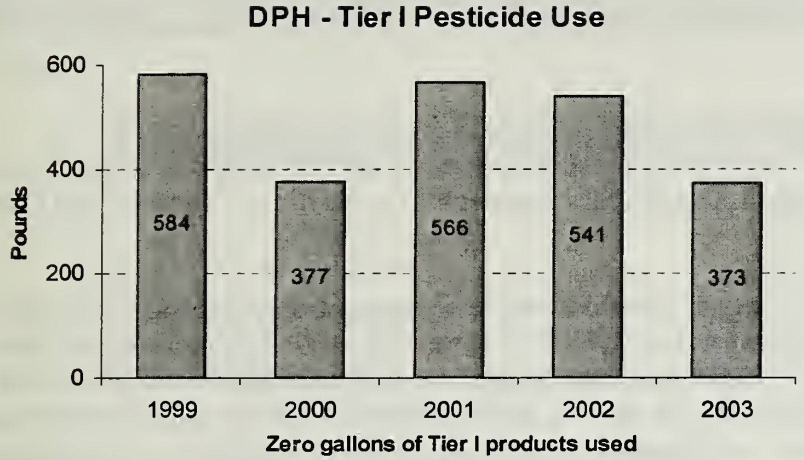


Figure 18

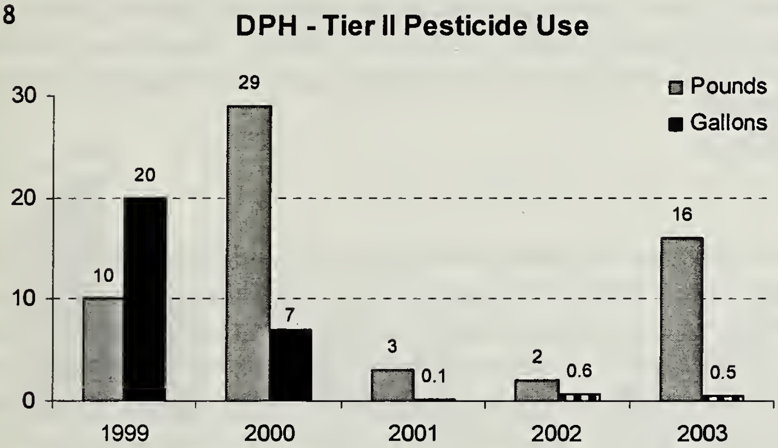
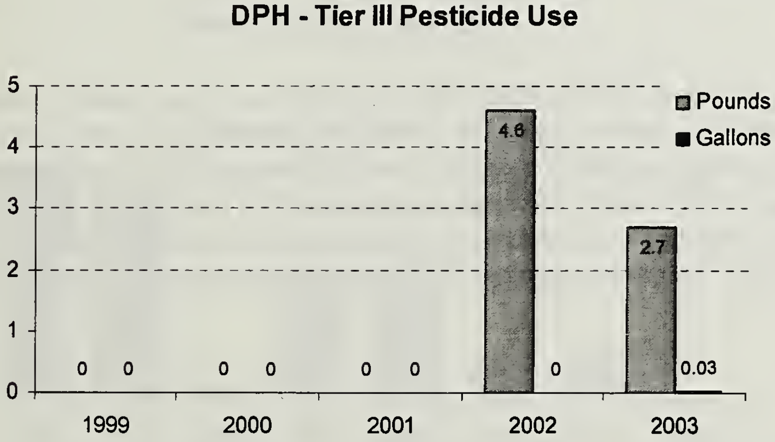


Figure 19



Department of Public Works

Trends in Amounts Used

The Department of Public Works (DPW) is a relatively minor user of pesticides in the City, with only three products used in 2003. Rodenticides account for the majority of product used (Table 6, Fig. 20).

DPW has reorganized its landscaping operations and is reviewing and updating its IPM Plan. SFE and the City IPM Consultant worked with DPW to develop an IPM Demonstration Pilot Project to showcase the use of weed fabric, bark mulch, and xeriscape plants in median strips and sidewalk plantings. Project areas remain healthy, meet meridian vegetation requirements, and continue to need minimal or no maintenance.

SFE has also worked with the DPW Urban Forestry program to achieve its IPM goals. This included the re-introduction of RoundUp use in road median areas with tall weed growth, where hand-weeding or weed-whacking would present a danger to workers. These areas, in order of priority, will be converted to weed cloth and mulch plantings, per the Demonstration Pilot Project, as time and funds allow.

Rodenticide Use

Use of rodenticides for rat control has decreased to less than one pound of product per year—representing a 99.7% decrease since 1996. *Weatherblok Bait with Bitrex* (active ingredient brodifacoum), a Tier I product, was the only product used (Fig. 21). Brodifacuom has serious concerns over secondary toxicity; that is, hazards to non-target predatory animals consuming dead or dying pest species. We are actively working with DPW and other City Departments to reduce or eliminate the use of this product in the future, by employing mass trapping, population monitoring, and sanitation programs. It is important to note that *Weatherblok Bait with Bitrex* contains 0.005% active ingredient, which amounts to 0.000003 ounces of active ingredient brodifacoum used over the past year.

RoundUp Use

DPW, for the fourth year in a row, has eliminated the use of RoundUp and other glyphosate products (Fig. 24). However, weeds are not being controlled adequately in some areas, such as median strips, especially during the Spring months. Lack of personnel has been the major limiting factor, according to DPW staff. DPW gardeners spend the majority of their time on special projects, and have little time available for landscape maintenance. An effort is being made to install weed barrier cloth everywhere possible, to reduce the need for spraying in the future.

Trends in Toxicity:

DPW continues to decrease the use of Tier I products (Fig. 22). All Tier I product use by DPW is for one rat control product (see above for more detail). This product is applied by Pestec, the city pest control contractor.

Use of Tier II products has decreased to almost zero, and no use of Tier III products has been reported (Fig.23). There may be opportunities for DPW to supplement future herbicide use with Tier III products when feasible (ie: not in situations where repeat entries present worker hazards).

Table 6. Products used by Department of Public Works in 2003

Product	Hazard Tier	EPA Reg Number	Amnt Used
Weatherblok bait with bitrex	I	10182-339-AA-10182	0.875 lbs
Maxforce Roach Killer Bait Gel	II	64248-14	0.0656 lbs
Terro California ant killer	II	149-8-AA-149	0.0469 gals

Department of Public Works - Pesticide Use Graphs

Figure 20

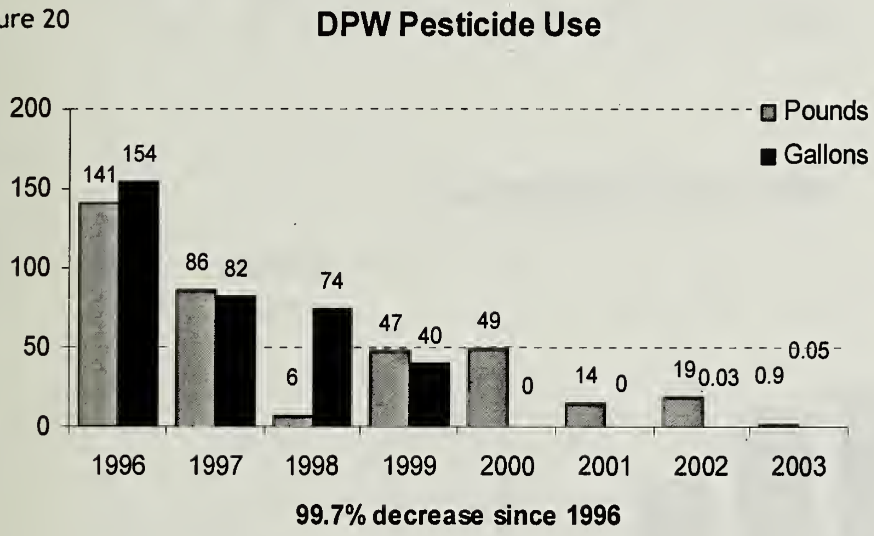


Figure 21

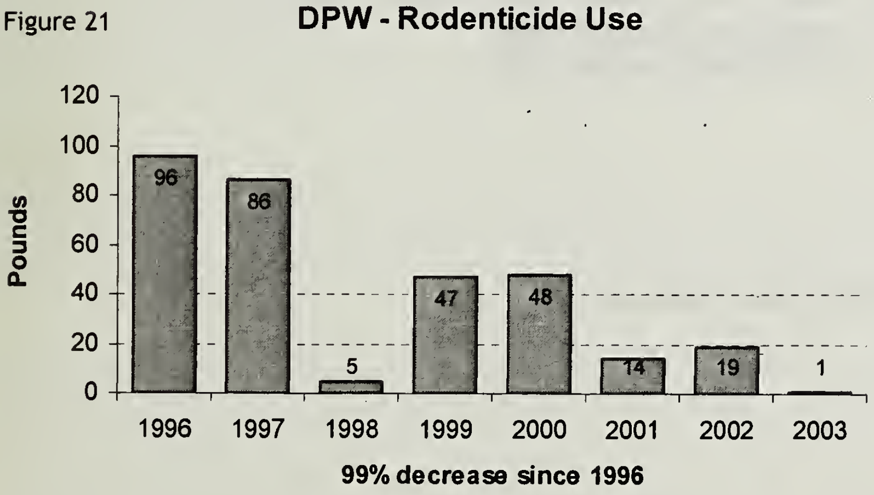


Figure 22

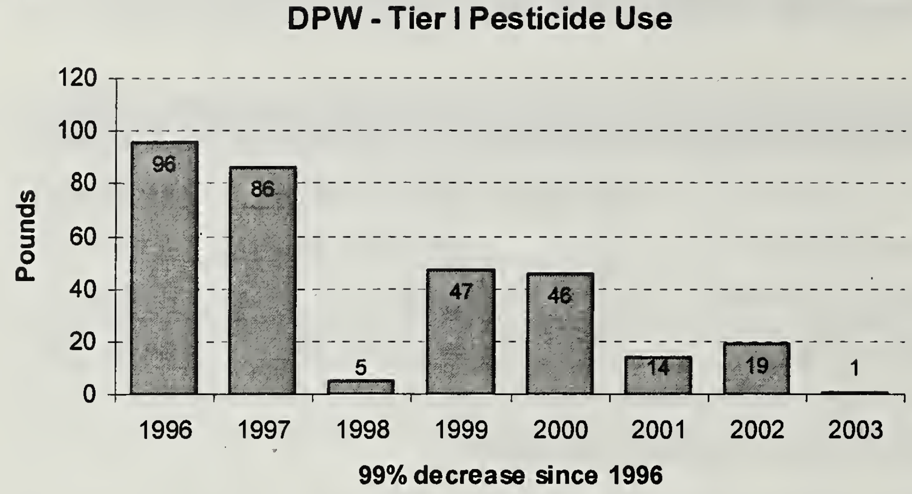
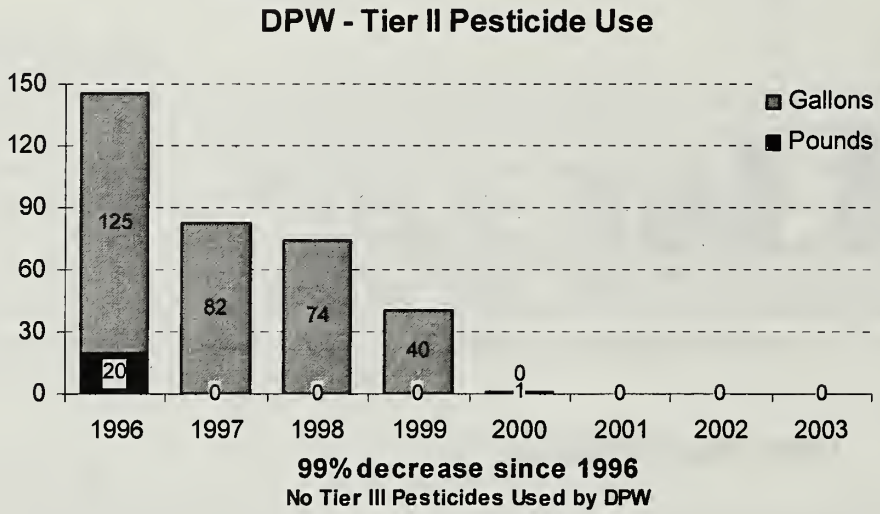
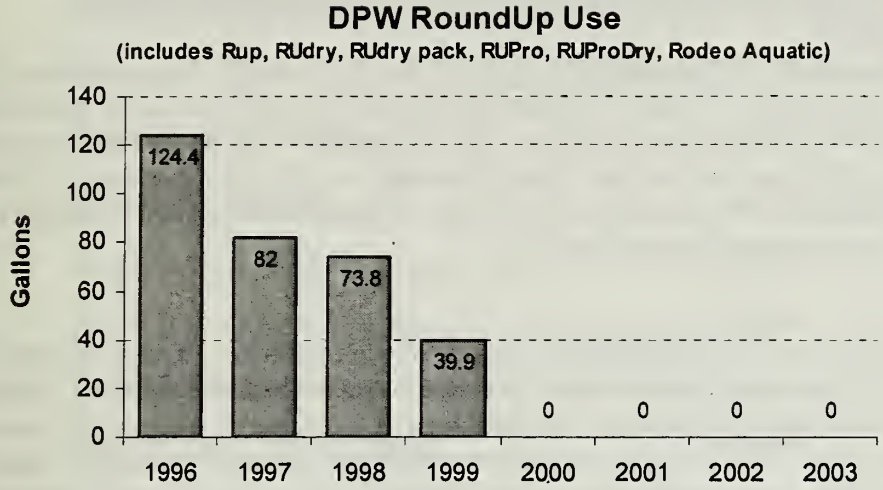


Figure 23



No Use of Tier III Products Reported

Figure 24


DPW RoundUp Use
(includes Rup, RUdry, RUdry pack, RUPro, RUProDry, Rodeo Aquatic)
Gallons
140
120
100
80
60
40
20
0
124.4
82
73.8
39.9
0
0
0
0
1996
1997
1998
1999
2000
2001
2002
2003

Department of Transportation (MUNI)

Trends in Amounts Used

Pesticide use by the Department of Transportation (MUNI) has decreased by approximately 50% since 1996 (Fig. 25). Application of liquid formulations has declined 87%, pointing to MUNI's move away from spray and broadcast applications. Dry formulation use has fluctuated with a decrease from 1997 to 2001 and an increase from 2 pounds in 2001 to 15 pounds in 2003. Accounting for this increase is the use of 13.8 pounds of Weatherblock bait rodenticide in MUNI's increased rat management efforts (Table 7).

Rodenticide Use:

MUNI has increased their use of rodenticides since 1996 in efforts to combat existing rat populations (Fig. 26). The only rodent control product currently used by MUNI contains brodifacoum (*Weatherblok bait with bitrex*). Brodifacoum is a chemical with great concerns over secondary toxicity, that is, hazards to non-target predatory animals consuming dead or dying pest species. The IPM Program will be working with MUNI and other City departments to re-evaluate the use of this active ingredient in the coming year. It is important to note that the overall use of rodenticides by MUNI is very low, only 13.8 pounds in 2003. Combined with the extremely low percentage of active ingredient in the products (0.005%), this amounts to 0.0007 lbs, or 0.011 ounces of brodifacoum used in 2003. Despite the low amount of active ingredient used, due to the toxicity concern with these products, we have been working with the City's pest control contractor (who applies rodenticides for MUNI) to eliminate the use of brodifacoum and expect its use to decrease to zero in 2004.

RoundUp Use:

The use of RoundUp herbicide over the life of the IPM program has plummeted to only 1.7 pounds used in 2002 and 2003, down 85% since 1996 (Fig. 27). Muni reports they are using approximately 1 ounce per application, an indication of minimal amounts of spot spraying and the elimination of broadcast applications. MUNI has increased its tolerance of weeds in some areas, and stepped up the use of weed-whackers in others. However, some areas needed weed control such as on the rail tracks throughout the City are not subject to mechanical controls such as weed-whackers due to the high risk of hitting cars and pedestrians with flying rocks kicked up by the rotating blade. In these areas a spray herbicide is needed for safety considerations, making the total elimination of RoundUp unlikely.

Trends in Toxicity:

The use of the most hazardous products, labeled Tier I, decreased from 1997 to 2001 and is now increasing from 1 pound in 2001 to 14 pounds in 2003 (Fig. 28). *Weatherblock bait with bitrex* accounts for all of the Tier I product use in 2003, and is part of the City's increased focus on rat management. No Tier I liquid formulations are used by MUNI.

Tier II products are in sharp decline, with solid formulations down to less than one pound used each year over the past few years (Fig. 29). Liquid formulations have dropped 83% since 1996 to 2 gallons in 2003.

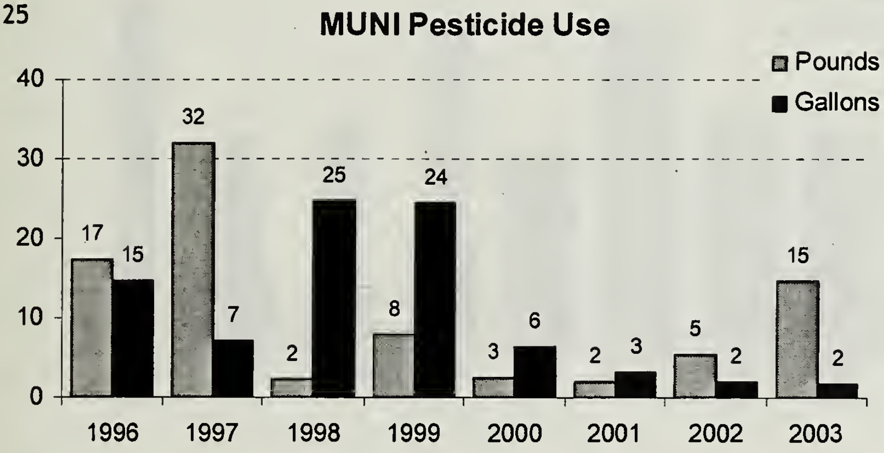
No tier III products are currently being used by MUNI. We would are currently encouraging MUNI and other Departments to test least-toxic Tier III herbicides.

Table 7. Products Used by MUNI in 2003

Product	Hazard Tier	EPA Reg Number	Amnt Used
Weatherblok bait with bitrex	I	10182-339-AA-10182	13.8188 lbs
Roundup Pro Herbicide	II	524-475-ZA-524	1.7344 gals
Maxforce Roach Bait F.05	II	64248-11	0.0875 lbs
Maxforce Roach Killer Bait Gel	II	64248-14	0.0744 lbs
Trifluralin (aka Niban bait)	II	64405-2-AA-64405	0.0625 lbs
Maxforce IBF4 Carpenter Ant Bait	II	64248-21	0.0069 lbs
Terro California Ant Killer	II	149-8-AA-149	0.0052 gals

MUNI - Pesticide Use Graphs

Figure 25



49% decrease since 1996

Figure 26

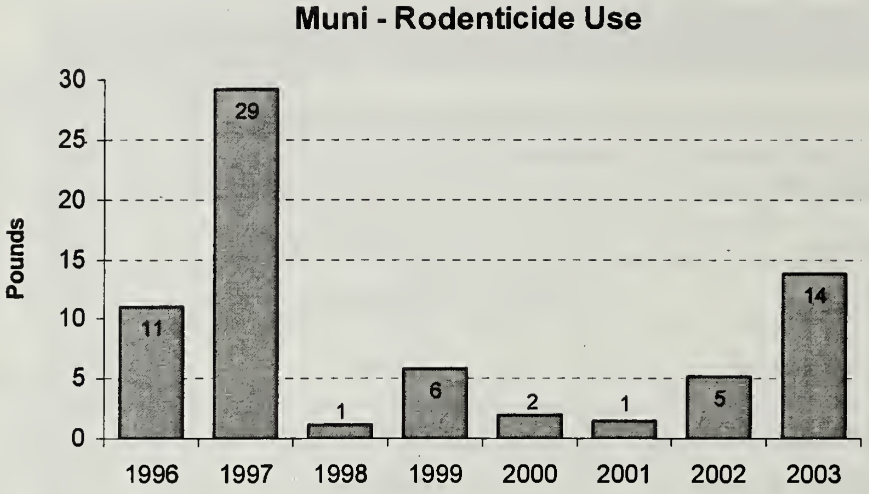
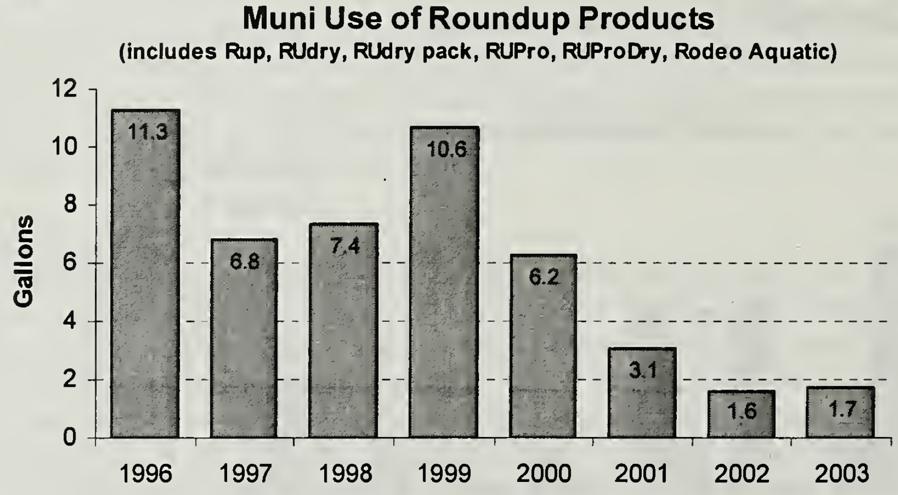


Figure 27



*Between 1996 and 1998 all RoundUp use by MUNI was reported in a single end-of-year report with no information on numbers of applications made.

Figure 28

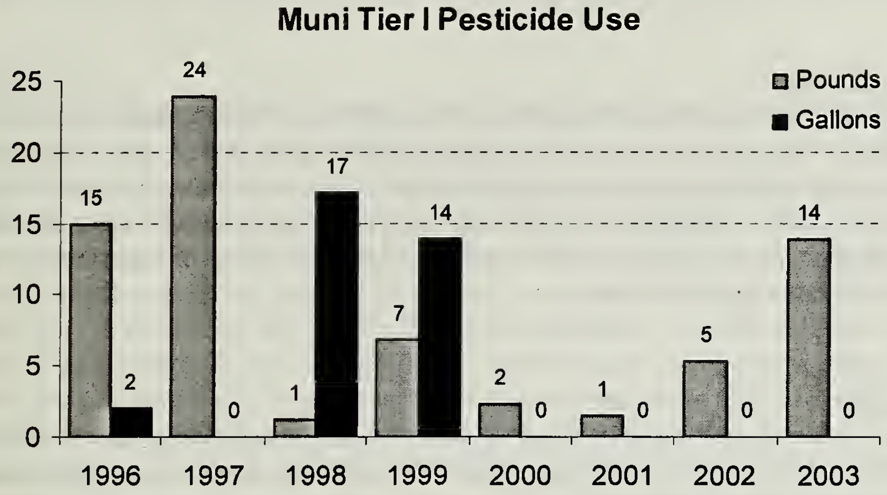
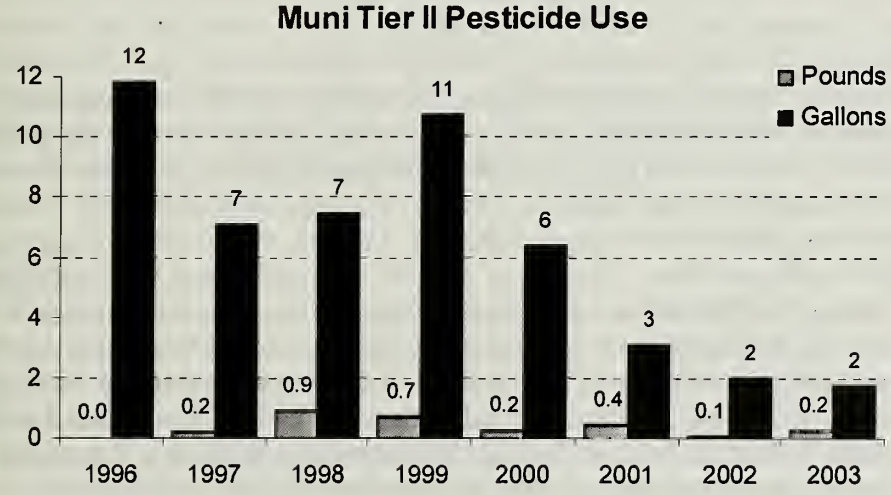


Figure 29



No use of Tier III products reported

Port of San Francisco

Trends in Amounts Used

The total amount of pesticide use by the SF Port Authority (Port) remains stable for dry formulations and has decreased to zero for liquid applications (Table 8, Fig. 30). The Port has focused on increased use of alternative weed control measures such as the use of mulch, mycorrhizal fungi inoculation, drought- and pest- tolerant plantings, mechanical weed removal, and more targeted pesticide applications as evidenced by the elimination of liquid sprays and the movement toward bait use where necessary.

Trends in Toxicity

The use of the most hazardous products defined as Tier I has remained stable since 1999 (Fig. 33). This is due mainly to rodenticide use (see explanation below). The Port continues to use zero liquid formulations of Tier I products.

Tier II pesticide use has decreased 99% to almost zero (0.03 lbs used in 2003), and no Tier III pesticide use has been reported by the Port (Fig. 34). We encourage the Port to look into replacing the Tier II products with those in Tier III whenever possible.

Rodenticide Use

The Port has been actively and consistently managing rodents since 1996, with rodenticides accounting for the majority of pesticide use for all years except 1998 (in 1998 65 lbs of *Spike Dry Flowable* herbicide took the lead) (Fig. 31). Over that period, the use of *Contrac all-weather blocks* (active ingredient bromadiolone, 0.005%) has been supplanted with *Weathblok bait with bitrex* (active ingredient brodifacoum, 0.005%). In 2003, this rodenticide accounted for 99.7% of all pesticide use by the Port. Total use of 65.6 lbs of *Weatherblok bait with bitrex* amounted to 0.0033 lbs, or 0.0525 ounces of total active ingredient used over the year. Brodifacoum is a chemical with concerns over secondary toxicity, that is, hazards to non-target predatory animals consuming dead or dying pest species. To minimize secondary toxicity hazards, all rodenticide use on Port property, applied exclusively by the Citywide pest control contractor Pestec, is carefully placed out of the way of non-target organisms in bait boxes. In addition, Pestec is increasing the use of snap traps on Port property as an alternative to rodenticides. Nonetheless, the increasing concern with brodifacoum has led the IPM Program to work with the Port and other City Departments to minimize or eliminate the use of products containing this ingredient. In response to this concern, 2004 use of products containing brodifacoum is expected to be greatly reduced or zero.

RoundUp Use

The use of RoundUp at the Port is reported at zero for the third year in a row (Fig. 32). Port gardening staff use various methods to prevent pest problems before they occur, and continually use least toxic methods when pest control action is needed. Port gardening staff applied for and received a toxics reduction grant in 2003 to purchase a wood chipper. The chipper has been used to generate large amounts of wood chip mulch, used for weed control, soil health improvement, landscape aesthetics, and stormwater runoff prevention. The use of native and drought tolerant plants has further decreased the need for pest control or chemical use. An additional benefit of using wood mulch is it's gradual decomposition over time, adding nutrients to the soil – not only does this increase plant resilience, it reduces or eliminates the need for chemical fertilizers.

IPM Efforts

The Port conducted a study to test the effects of mycorrhizal fungi inoculation on native landscape plantings. These beneficial fungi are known for being essential to the survival of some plants and for increasing the health of others. The goal of purchasing these products is to increase plant health and thereby decrease the need for fertilizers and pest control efforts. A set of new native plantings in Rincon Park was inoculated with mycorrhizal fungi in February 2003. Over a 6-month test period two test plots and two control plots were monitored for plant vitality and health via visual inspection and photo documentation. Visible differences were found between plants in the test and control plots, with *Manzanita* and *Salvia* plants showing the greatest benefit from inoculation in terms of plant appearance. Eight months after the start of the project the control plot began to show the same positive results as the test plot; because mycorrhizal fungi are known to spread to adjacent areas it is possible they eventually colonized the control plot, causing the recorded increase in plant health upon establishment. Soil testing as a component of this study was cost prohibitive. Carolyn Adams, a Port gardener, presented the findings of the study at the annual IPM Conference in January 2004.

In addition to investigating methods of increasing plant health, the Port uses several mechanical methods for weed control including using weed whackers, weed torches, mowers, black tarping, wood chips, and weed hoes. Port gardening staff applied for and received a grant to purchase a wood chipper to improve landscape aesthetics, improve soil health at many sites, and solve a solid waste problem. The gardening staff's involvement with the IPM technical advisory committee also connected them to the USDA soils group who will be working with them in the future to identify soil deficiencies and remedies.

Challenges

The Port gardening department has only two gardeners who tend to all landscaped Port property. This at times leaves inadequate time for maintenance of existing projects, leading to weed establishment in neglected areas. Areas such as 24th Street Park (Warm Water Cove), Islas Creek Park, and several right-of-way areas continue to have high levels of weed growth. Herons Head Park is one site where adequate attention has produced a model landscape. This restoration site has 300 new toyon trees (*Heteromeles arbutifolia*), a drought and pest tolerant California native. Tree wells and planting beds are adequately mulched, and the use of propane torches for weed control is planned for the near future.

A few areas have been identified where the Port could increase the productivity of its limited gardening staff time. Automated sprinkler systems would eliminate the need for frequent staff attention. Additionally, staff access to existing Port tools and equipment, such as propane for weed torches, bobcats for large digging projects, and a water truck for new plantings, would increase the efficiency of staff efforts. For increasing landscape maintenance efficacy, it is also important that the materials and soil amendments ordered are delivered in a timely manner.

Table 8. Pesticide Products used by the Port of SF in 2003

Product	Hazard Tier	EPA Reg Number	Amnt Used
Weatherblock bait with bitrex	I	10182-339-AA-10182	65.6319 lbs
Trifluralin (aka Niban bait)	II	64405-2-AA-64405	0.0625 lbs
Terro California Ant Killer	II	149-8-AA-149	0.0342 gals
Maxforce Ant Bait F1	II	64248-10-AA-64248	0.0313 lbs

Port of San Francisco - Pesticide Use Graphs

Figure 30

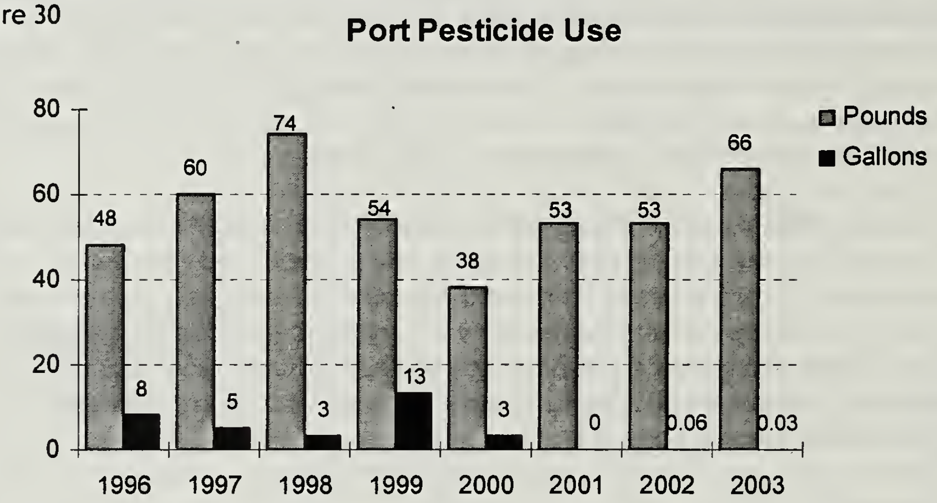

Port Pesticide Use

Figure 31

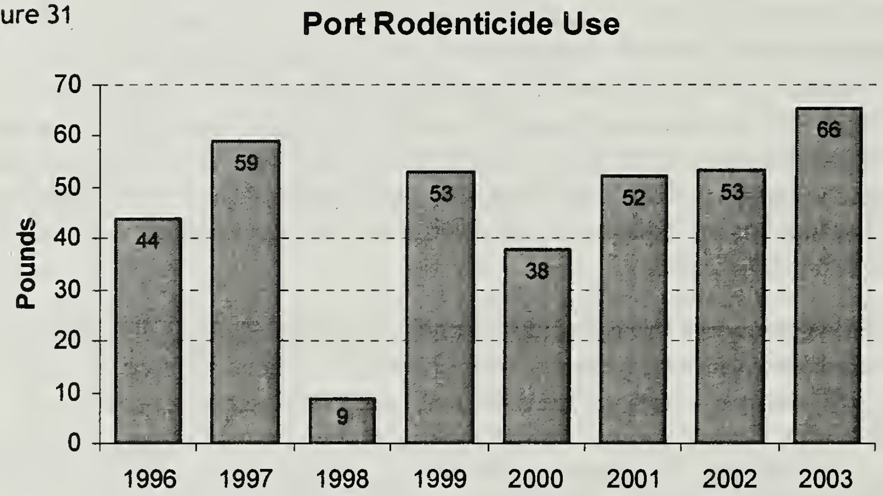
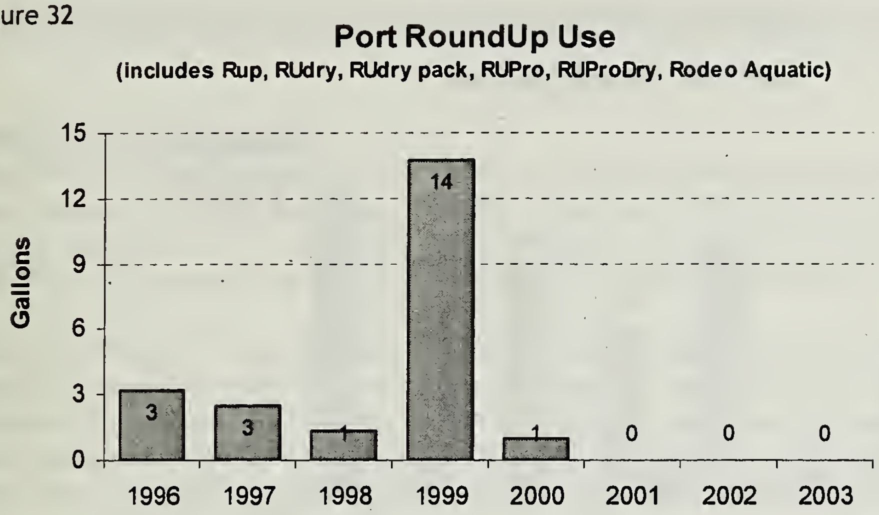

Port Rodenticide Use

Figure 32



Zero pounds of RoundUp/Glyphosate use reported

Figure 33

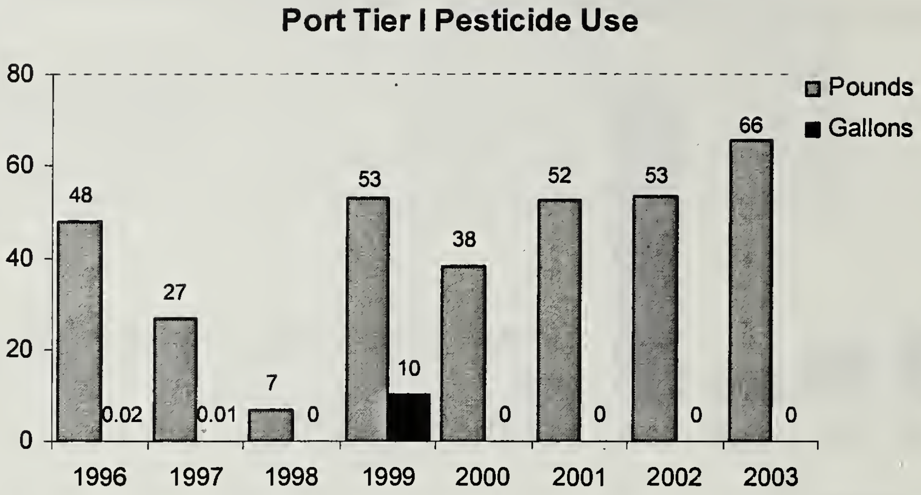
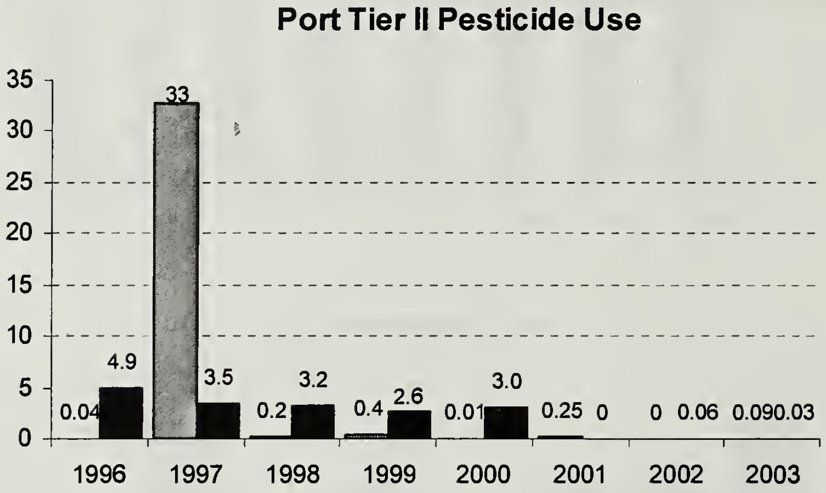


Figure 34



No use of Tier III products reported

Public Utilities Commission

Trends in Amounts Used

The Public Utilities Commission (PUC) is the second largest pesticide user among City departments. Since the beginning of the IPM Program in 1996, PUC has dramatically reduced its total pesticide use both in pounds (92% reduction) and gallons (97% reduction) (Fig. 35). The reduction in pounds/gallons used has leveled off during the past four years.

The kinds of pesticides used have also changed: In poundage, herbicides have decreased steadily, rodenticides have fluctuated after the first-year reduction, and mosquito control products dropped initially but then increased in the past two years, probably due to West Nile virus concerns (Table 9). Overall, PUC is clearly using fewer and safer pesticides than in the past. This trend reflects the many creative non-chemical approaches employed by PUC staff from manual control of pampas grass, habitat modification to discourage pests, and the use of goats instead of herbicides for weed control.

Rodenticide Use

Rodenticide use has fluctuated since an initial drop in 1997, but has increased steadily for the past three years (Fig. 41). About half of the rodenticides were used to control pocket gophers at the Sunol corporation yard and turf areas. The remainder was used by the City's pest control contractor for rat control at three PUC-Water Dept. facilities. In general, the increase in rat baiting has corresponded to an increased Citywide effort to control rats, not from any measured increase in rat populations.

Mosquito Control

Mosquito larvicides again accounted for the majority of PUC pesticide use, when measured in pounds of product: 42 lbs. out of a 81 lbs. total (Fig. 36). This usage represents a significant drop from 2002, when about 77 pounds of larvicide was applied. The larvicides used by the PUC fit the requirements of an IPM program. They are some of the least toxic, yet most effective products available, and they target mosquitoes at their most vulnerable stage. Much of the PUC mosquito abatement and control work focuses on eliminating breeding habitat (standing water), or applying larvicides when necessary.

RoundUp Use:

Roundup use dropped by 99% since the beginning of the IPM program in 1996, and has leveled off at very low levels for the past three years (Fig. 37). Lack of staffing resources accounted for part of the reductions, forcing the use of herbicides on an as-needed and time-available basis. The PUC currently limits herbicide applications to problem weed areas and sidewalks. Additionally, PUC has been using more mechanical weed management methods such as mowing, weed whacking, and goat grazing. In cases where herbicide is used, the area is most often mechanically weeded beforehand, then RoundUp is used sparingly on emerging vegetation one week later. This targeting of the most susceptible stage of plant growth has helped the PUC to drastically reduce chemical use.

Trends in Toxicity

The use of the most hazardous products defined as Tier I rose from 8 to 16 lbs. between 2002 and 2003 (Fig. 38). *Weatherblok Bait with Bitrex®* (active ingredient brodifacoum), a rodenticide use to control rats, accounted for 15 of the 16 pounds. The other Tier I product used was *Transline* (active ingredient clopyralid) – an herbicide commonly applied to control the invasive weed yellow star thistle. Clopyralid has low acute toxicity but has aroused concern over its persistence in compost.

Tier III products – the lowest hazard category of pesticides – decreased somewhat in 2003, due to a reduction in the use of microbial mosquito control products (*VectolexG*) (Fig. 40). Tier II products, the middle category, remained roughly equal (Fig. 39).

Table 9. SF PUC pesticide products used in 2003

Product	Hazard Tier	EPA Reg Number	Amnt Used
Agnique MMF	II	53263-28	7.19 gals
Vectolex G biological mosquito larvicide	III	275-77-AA-275	34.7556 lbs
Roundup Pro herbicide	II	524-475-ZA-524	3.0859 gals
Eaton's answer for the control of pocket gophers	II	56-57-AA-56	20 lbs
Advance liquid ant bait	III	56-72-AA-499	2.5 lbs
Weatherblok bait with bitrex	I	10182-339-AA-10182	14.975 lbs
Maxforce professional insect control granules	I	64248-6-ZA-64248	0.9688 lbs
Trifluralin (aka Niban bait)	II	64405-2-AA-64405	0.75 lbs
Rodeo aquatic herbicide	II	524-343-AA-524	0.3906 gals
Terro California ant killer	II	149-8-AA-149	0.3141 gals
PT 515 Wasp-freeze	II	499-362-AA-499	0.2969 gals
Turflon ester	II	62719-258-AA-62719	0.2734 gals
Maxforce IBF4 Carpenter Ant Bait	II	64248-21	0.0656 lbs
Garlon 4	II	62719-40-ZB-62719	0.0625 gals
EZJect selective injection herbicide caps	II	524-435-AA-524	0.0273 gals
Transline (exemption – not approved)	I	62719-259-AA-62719	0.0117 gals

Public Utilities Commission - Pesticide Use Graphs

Figure 35

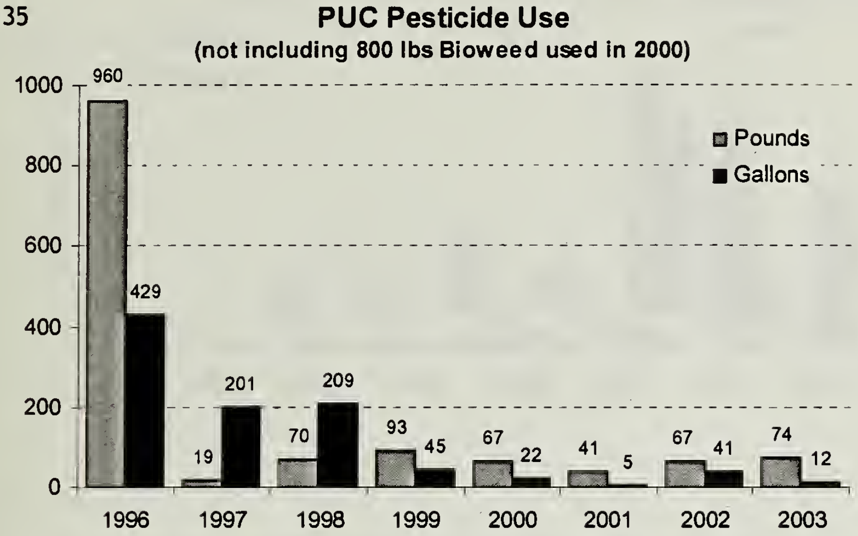


Figure 36

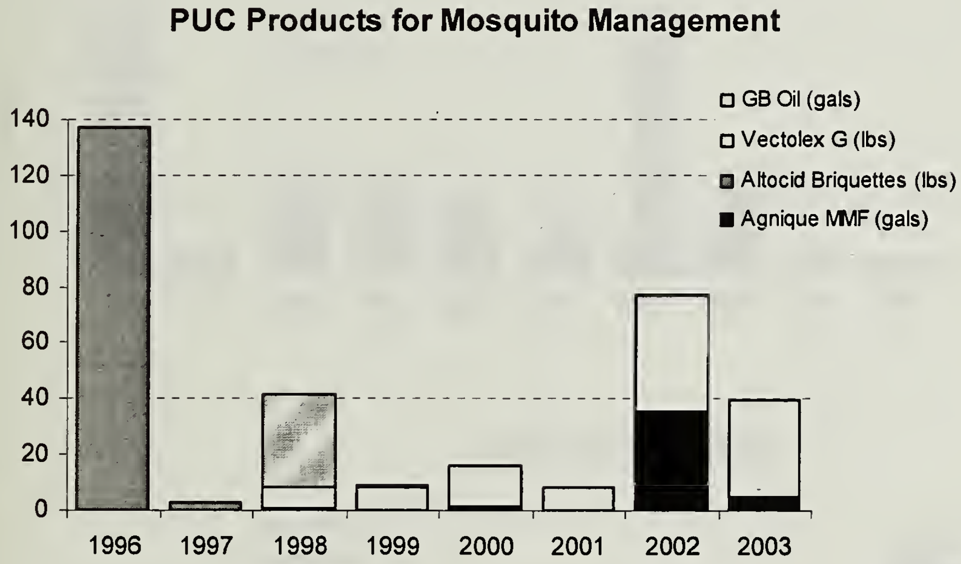


Figure 37

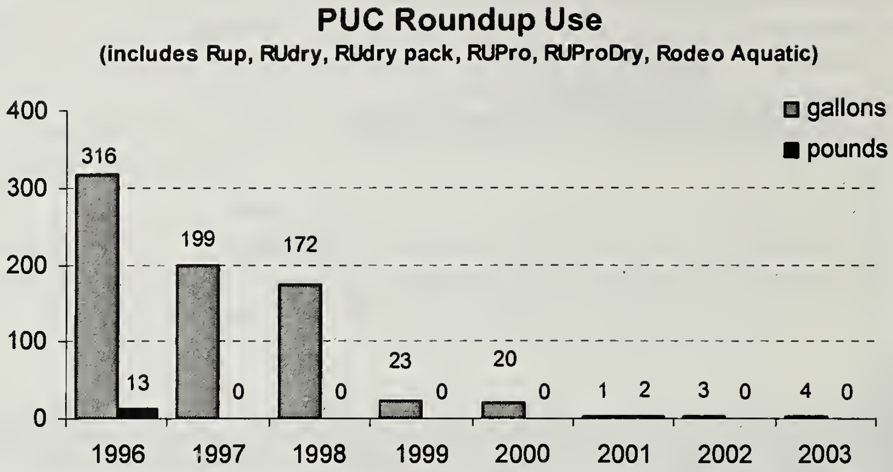


Figure 38

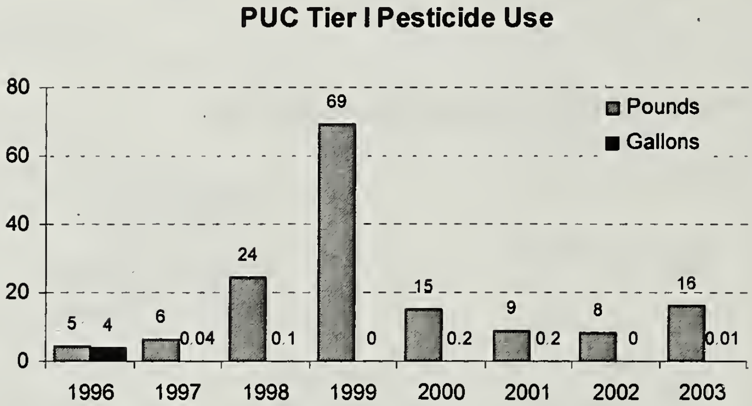


Figure 39

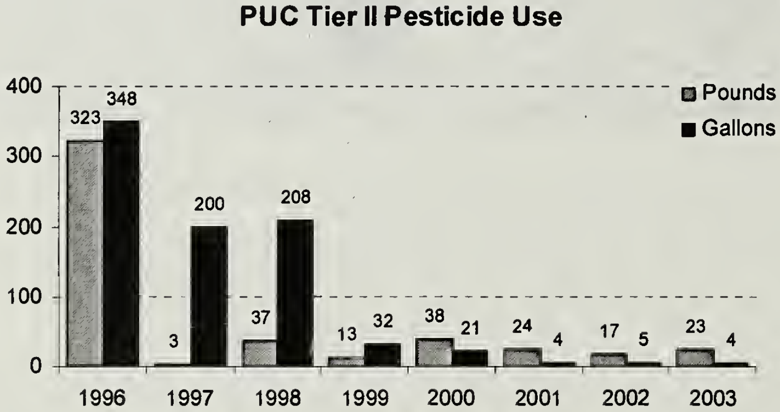


Figure 40 (excludes Bioweed and Suppressa use)

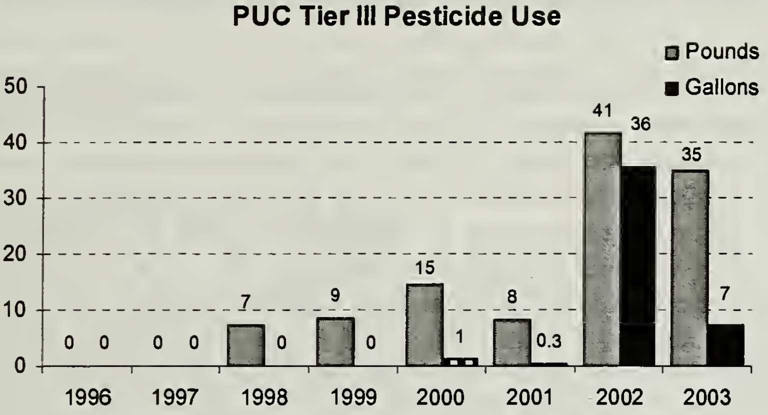
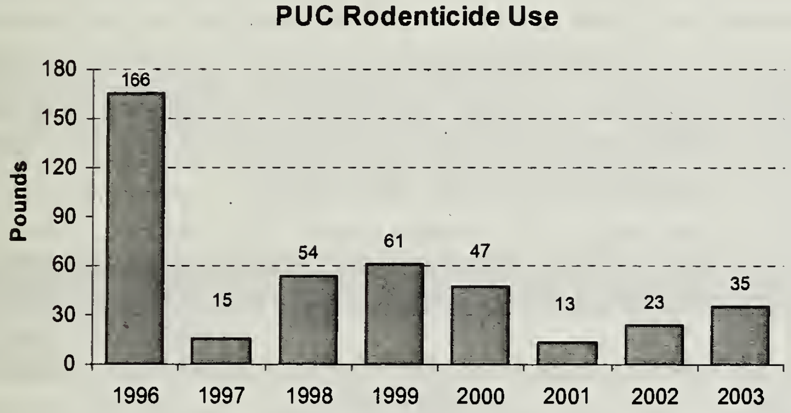


Figure 41



Department of Recreation and Parks

Trends in Amounts Used

The Department of Recreation and Parks (R&P) is the biggest user of chemical pesticides in San Francisco because this department manages the largest acreage of landscaped area. There is considerable IPM expertise within the ranks of R&P: The department currently has three staff licensed as Agricultural Pest Control Advisors (PCAs), and numerous staff with Qualified Applicator Certificates. This professionalism is reflected in both the innovative projects undertaken by R&P and by the decreasing trend in pesticide use. It is important to remove Supressa and Bioweed from these analyses because these nontoxic products were applied by the ton, thus skewing other pesticide use statistics (Fig. 42). If pesticide use is examined without looking at Supressa/Bioweed products, R&P overall pesticide use (dry formulations, excluding rodenticides) has decreased by 70% since 1996 (Fig. 43). However, when rodenticides are included the use patterns remain consistent with only a 28% decrease since 1996 in dry formulations. This is due to mainly to the increased use of rodenticides over the past several years (Fig. 44), as well as to the high standards to which the municipal Harding Park Golf Course is being held.

Rodenticide Use

Rodenticide use has increased 152% since 1996, but decreased 31% between 2002 and 2003 (Fig. 44). The high quantity of rodenticide use is due not to elevated pest pressure, but rather to a more concerted effort to tackle rodent problems in park areas around the City. The rodenticide products used by R&P, in order of quantity used in 2003 are as follows:

Table 10. Department of Rec&Parks 2003 rodenticide use

Product Name	EPA Number	Pest	Active Ing %	Lbs/ozs Product	Lbs Act Ing
Ditrac super-size blox	12455-14-ZA-12455	Rats/mice	Diphacinone 0.005%	496.75 lbs	0.0248 lbs
Eaton's all-weather bait blocks rodenticide	56-42-AA-56	Rats/mice	Diphacinone 0.005%	415.63 lbs	0.0208 lbs
Eaton's answer for the control of pocket gophers	56-57-AA-56	Gophers	Diphacinone 0.005%	355.13 lbs	0.0178 lbs
Maki mini-block	7173-202-AA-7173	Rats/mice	Bromadiolone 0.005%	284.63 lbs	0.0142 lbs
Generation mini blocks	7173-218-AA-7173	Rats/mice	Difethialone 0.0025%	95.06 lbs	0.0024 lbs
JB Eaton Top Gun All Weather BaitBlock Rodenticide	67517-66-56	Rats	Bromethalin 0.01%	32.13 lbs	0.0031 lbs
Eaton's all weather bait blocks rodenticide	56-42-AA-56	Rats	Diphacinone 0.005%	6.25 lbs	0.0003 lbs
Eaton's bait blocks rodenticide with bitrex	56-44-ZA-56	Rats	Diphacinone 0.005%	1.63 lbs	0.0001lbs
Weatherblok bait with bitrex	10182-339-AA-10182	Rats	Brodifacoum 0.005%	1.09 lbs	0.0001 lbs

R&P has made a concerted effort to reduce the amount of products containing the active ingredient brodifacoum due to serious concerns over secondary toxicity, that is, hazards to non-target predatory animals consuming dead or dying pest species. In fact, it is currently the most infrequently used rodenticide by R&P (Table 10). It is important to note that because the formulations contain such a small percent of active ingredient, actual amount of brodifacoum used is very low. In 2003, 1.09 lbs of Weatherblok bait with bitrex was used; with an active ingredient percentage of 0.005%, this amounts to only 0.0001 lbs or 0.0016 ounces of brodifacoum. R&P plans to completely eliminate the use of rodenticides containing brodifacoum in 2004.

RoundUp and Other Herbicide Use:

R&P showed 16 gallons and 203 pounds of *RoundUp* used in 2003, a 92% decrease in liquid formulations and a 306% increase in dry formulations over 2002 (Fig.45). R&P has been moving away from the use of the liquid *RoundUp* products due to concerns with the inert ingredients. Additionally, the dry granular formulation is easier to pour and has less change of spill, does not leave residue on the outside of containers, is in dry granular form and is therefore easier to clean up in the case of a spill. According to Monsanto (the product's manufacturer), the inert ingredients in the dry formulation have fewer toxicity concerns.

In 2002 the Harding Park Golf course renovation employed the use of 140 gallons of *RoundUp* herbicide to kill all the existing kikuyu grass before re-planting with more desirable grasses. The course remains free of kikuyu, with new patches being spot treated or removed by hand when detected. The course renovation project was justified and funded in part by the ability to hold PGA tournaments at the site after the renovation. This necessitates the continued maintenance of very low weed levels and high aesthetic standards. Although post-renovation kikuyu remains under control, several new weeds have invaded, including *Soliva sessilis* (field soliva) and Swine cress (*Coronopus* sp.). Much of the non-*RoundUp* herbicide use in 2003 (*Vanquish*, *Turflon ester*, and *Proturf new KOG Weed Control*) is to mediate the invasion of these weeds and satisfy the PGA tournament standards.

Trends in Toxicity

R&P use of Tier I products, those with the highest toxicity concerns, has fluctuated over the years (Fig. 46) with an overall decreasing trend. In 2003 the total quantity of Tier I products showed an increase of 95% over the start of the IPM program in 1996. However, since the Hazard Tier rating system was implemented in 1999 and these products were identified as high hazard, R&P's use of Tier I products has decreased by 40% and the use of liquid Tier I products has been phased out. The 206% increase from 416 lbs in 2002 to 804 lbs in 2003 was due mainly to increased use of two products:

Pesticide Used	2002	2003
Maki mini blocks rodenticide	28 lbs	285 lbs
Proturf New KOG herbicide	95 lbs	369 lbs

The use of Proturf New KOG Weed Control has increased sharply over the past few years as it has replaced the more toxic Vanquish herbicide (Fig. 8). It is used only on high maintenance turf (golf greens, bowling greens, and croquet greens) with heavy pressure from invasive weeds. These weeds are often hand-weeded, but occasionally need to be treated with an herbicide. Although Proturf New KOG Weed Control and Vanquish are both Tier I products, Vanquish (decreased to 33 gallons used in 2003) contains 54% active ingredient whereas its replacement contains only 0.7% active ingredient. R&P has also been substituting the Tier II product Turflon

Ester for Vanquish (Tier I), in a further effort to reduce overall risks. However, Vanquish is still being used for certain problematic or herbicide-resistant weeds in high profile turf.

The top five most widely used Tier I products are:

Herbicide: *Proturf new KOG weed control*
Rodenticide: *Maki Mini Blocks*
Fungicide: *Proturf systemic fungicide*
Herbicide: *Vanquish herbicide*
Fungicide: *3336 WP fungicide*

It is encouraging to see the use of these products declining over time, with *PT brand 175 microcare* being reduced to 0.58 gallons of use in 2003 (Table 11). Fungicide use by R&P on golf courses is also steeply declining and may be the result of their increased use of EM1, a microbial product, and compost tea applications on golf greens. R&P has eliminated the use of *Durham metaldehyde granules* to zero and is now using iron phosphate instead (Sluggo)—a Tier III product.

The use of Tier II products rose from 1999 to 2002 as the direct result of substituting Tier I products with the less toxic ones in Tier II (such as *Vanquish* being phased out and replaced by *Turflon Ester*, above) (Fig. 47). However, R&P's use of Tier II products decreased 38% between 2002 and 2003.

The use of Tier III products by R&P has increased since 1999 (Fig. 48). This reflects the increasing trial and use of least-toxic products in this Tier as a replacement for more toxic Tier 1 and Tier 2 products. Recreation and Parks staff are active participants in the process of seeking and testing less toxic alternatives; as such, we expect the use of Tier 3 products to increase over time.

Other Notes

It is important to note that the R&P has demonstrated a commitment to the IPM program that may not be wholly reflected in the data included in this report. Activities such as training for staff, pilot projects experimenting with compost tea and EM-1 products, trial use of non-toxic rodenticides, increased use of mechanical weed removal and weed tolerance at Sharp Park and Lincoln golf courses, increased use propane-powered weed torches, extensive use of mulch to prevent weeds, use of beneficial insects, and manual removal efforts for aquatic weeds all indicate R&P's willingness to seek alternatives to chemical pesticides. Use of weed barriers such as weed fabric or cardboard covered by mulch is increasing and turning many landscaped areas into low maintenance sites. At Harding Park golf course a large-scale weed hand-removal program is being planned where a group of workers will come in for several days and dedicate their time to physical removal of english daisies and other problem weeds. R&P's use of "weed daubers" to target herbicide applications helps them reduce pesticide use and exposure while curbing the spread of invasive species. R&P is also stepping up their composting program with financial planning to purchase equipment necessary to process high quality compost. For mosquito control, R&P staff have drained several water sources, use *Bacillus thuringiensis* bacterial products to manage larval mosquitoes, and have introduced mosquito fish (*Gambusia affinis*) to contained ponds.

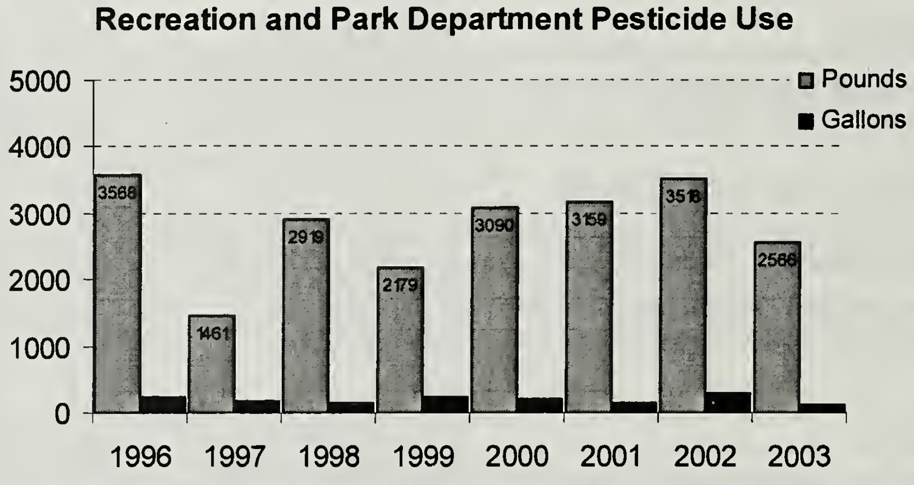
Table 11. Pesticide Products Used by the Dept. of Recreation and Parks, 2003

Product	Tier	EPA Number	Amount	Unit
DITRAC SUPER-SIZE BLOX	II	12455-14-ZA-12455	496.750	lbs
EATON'S ALL-WEATHER BAIT BLOCKS RODENTIC	II	56-42-AA-56	415.625	lbs
PROTURF NEW K-O-G WEED CONTROL	I	538-112-AA-538	368.500	lbs
EATON'S ANSWER FOR THE CONTROL OF POCKET	II	56-57-AA-56	355.125	lbs
MAKI MINI-BLOCK	I	7173-202-AA-7173	284.625	lbs
ROUNDUP PRO DRY	II	524-505	203.572	lbs
PROTURF SYSTEM SYSTEMIC FUNGICIDE BY SCOTT'S	I	538-88-ZA-538	112.500	lbs
GENERATION MINI BLOCKS	IV	7173-218-AA-7173	95.063	lbs
NEU 1165M SLUG AND SNAIL BAIT (AKA SLUGGO)	III	67702-3-AA-67702	82.250	lbs
VECTOBAC-G BIOLOGICAL MOSQUITO LARVICIDE	III	275-50-AA-275	57.000	lbs
AQUASHADE	III	33068-1-AA-33068	36.000	gals
MARATHON 1% GRANULAR GREENHOUSE AND NURS	I	3125-452-AA-59807	33.494	lbs
VANQUISH HERBICIDE	I	55947-46-AA-55947	32.875	gals
JB EATON TOP GUN ALL WEATHER BAITBLOCK RODENTICIDE	II	67517-66-56	30.563	lbs
ROUNDUP PRO HERBICIDE	II	524-475-ZA-524	15.239	gals
TURFLON ESTER	II	62719-258-AA-62719	11.856	gals
PT 515 WASP-FREEZE WASP AND HORNET	II	499-362-AA-499	9.160	gals
TRIFLURALIN	II	64405-2-AA-64405	9.063	lbs
M-PEDE INSECTICIDE	II	53219-6-AA-53219	6.270	gals
EATON'S ALL-WEATHER BAIT BLOCKS RODENTIC	II	56-42-AA-56	6.250	lbs
GARLON 4	II	62719-40-ZB-62719	4.893	gals
3336 WP TURF AND ORNAMENTAL FUNGICIDE IN	I	1001-63-AA-1001	4.000	lbs
KALIGREEN	III	70231-1-AA-70231	2.250	lbs
EATON'S BAIT BLOCKS RODENTICIDE WITH BIT	II	56-44-ZA-56	1.625	lbs
JB EATON TOP GUN ALL WEATHER BAITBLOCK RODENTICIDE	II	67517-66-56	1.563	lbs
JMS STYLET-OIL	II	65564-1-AA-65564	1.359	gals
HERITAGE FUNGICIDE	I	10182-408-AA-10182	1.313	lbs
BOTANIGARD ES	III	65626-8-ZA-65626	1.186	gals
3336 WP TURF AND ORNAMENTAL FUNGICIDE IN	I	1001-63-AA-1001	1.109	lbs
WEATHERBLOK BAIT WITH BITREX (MADE WITH	I	10182-339-AA-10182	1.094	lbs
SUN SPRAY ULTRA-FINE SPRAY OIL	I	862-23-AA-53219	0.849	gals
PT BRAND 175 MICROCARE	I	499-381-AA-499	0.551	gals
ROOTONE F BRAND ROOTING HORMONE	I	264-499-AA-264	0.500	lbs
MOSQUITO DUNKS	III	6218-47-ZB-6218	0.433	lbs
MAXFORCE ROACH CONTROL SYSTEM	I	64248-1-AA-64248	0.429	lbs
JAVELIN WG	III	70051-66-AA-70051	0.406	lbs
ENSTAR II INSECT GROWTH REGULATOR	III	55947-82-ZA-55947	0.400	gals
NEU 1165M SLUG AND SNAIL BAIT (AKA SLUGGO)	III	67702-3-AA-67702	0.375	lbs
RODEO AQUATIC HERBICIDE	II	524-343-AA-524	0.320	gals
PRESCRIPTION TREATMENT BRAND MICROCARE P	I	499-381-ZA-499	0.297	gals
ROUNDUP PRO DRY	II	524-505	0.281	lbs
AVID 0.15 EC	II	618-96-AA-618	0.277	gals
SONAR A.S.	II	67690-4-AA-67690	0.250	gals
CONSERVE SC TURF AND ORNAMENTAL	I	62719-291-AA-62719	0.214	gals
ROACHX	II	71761-1-AA	0.191	gals
FLUORGUARD ANT CONTROL BAITS	III	1812-348-AA-279	0.179	lbs
UNCLE ALBERT'S ANT BAIT	II	73340-1	0.176	gals
EZJECT SELECTIVE INJECTION HERBICIDE CAP	II	524-435-AA-524	0.114	lbs
MAXFORCE ROACH KILLER BAIT GEL	II	64248-14	0.066	gals
MAXFORCE ANT BAIT F1	II	64248-10-AA-64248	0.066	gals

Table 11. Pesticide Products Used by the Dept. of Recreation and Parks, 2003				
Product	**Tier**	**EPA Number**	**Amount**	**Unit**
PENDULUM WDG HERBICIDE	II	241-340-AA-241	0.063	lbs
TERRO CALIFORNIA ANT KILLER	II	149-8-AA-149	0.062	gals
AZATIN XL	II	70051-27-59807	0.059	gals
MOSQUITO DUNKS	III	6218-47-ZB-6218	0.058	lbs
ORANGE GUARD	III	61887-1-AA	0.039	gals
PT BRAND 175 MICROCARE	I	499-381-AA-499	0.031	gals
CINNAMITE	III	58866-12-ZA-65626	0.018	gals
MICRO-GEN PRO-CONTROL ANT BAITS	IV	11540-20-AA-11540	0.008	gals
SUN SPRAY ULTRA-FINE SPRAY OIL	I	862-23-AA-53219	0.008	gals

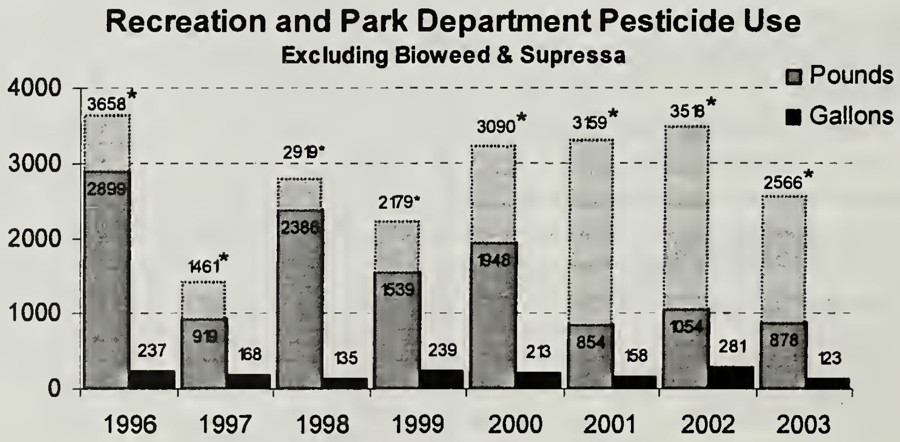
Department of Recreation and Parks - Pesticide Use Graphs

Figure 42


Recreation and Park Department Pesticide Use

*Dotted lines include Suppressa (corn gluten meal) - No bio-weed used

Figure 43


Recreation and Park Department Pesticide Use
Excluding Bioweed & Supressa

*Dotted lines include rodenticide use
(99.95% food ingredients, 0.005% active ingredient)

Figure 44

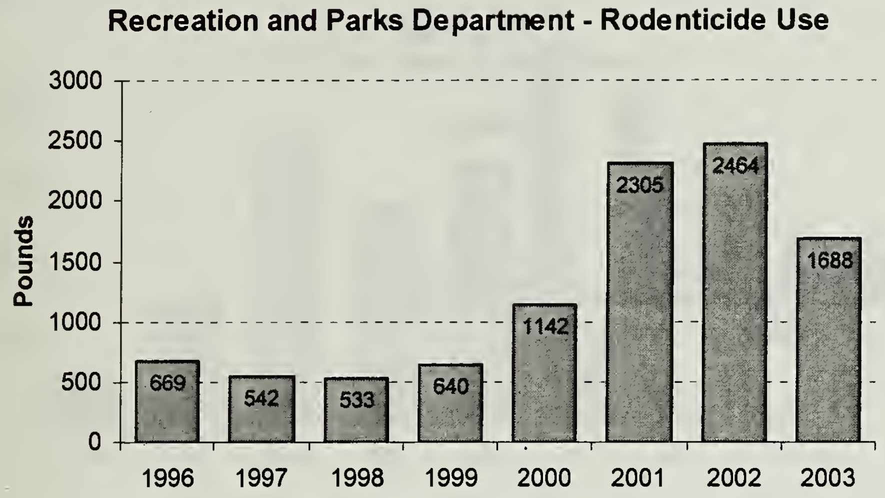


Figure 45

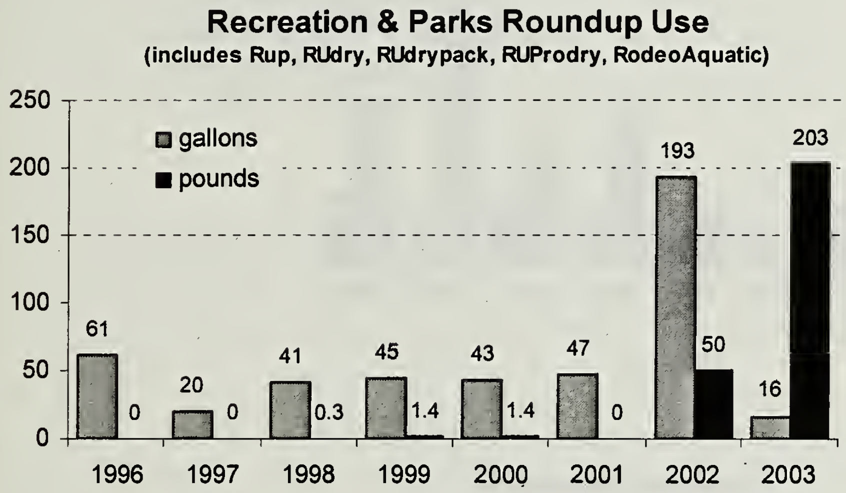


Figure 46

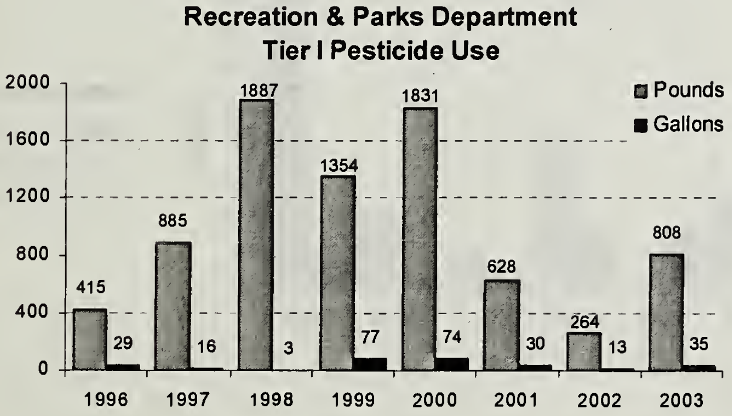


Figure 47

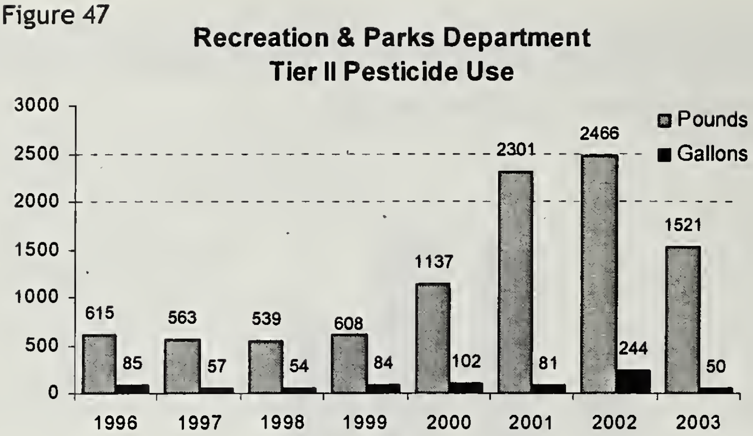


Figure 48

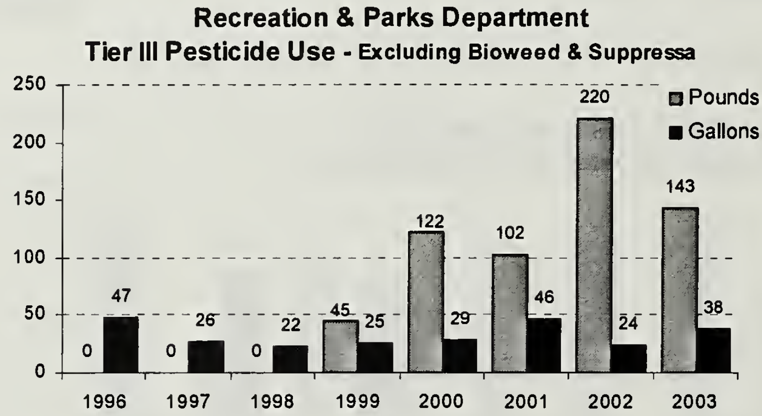


Figure 49

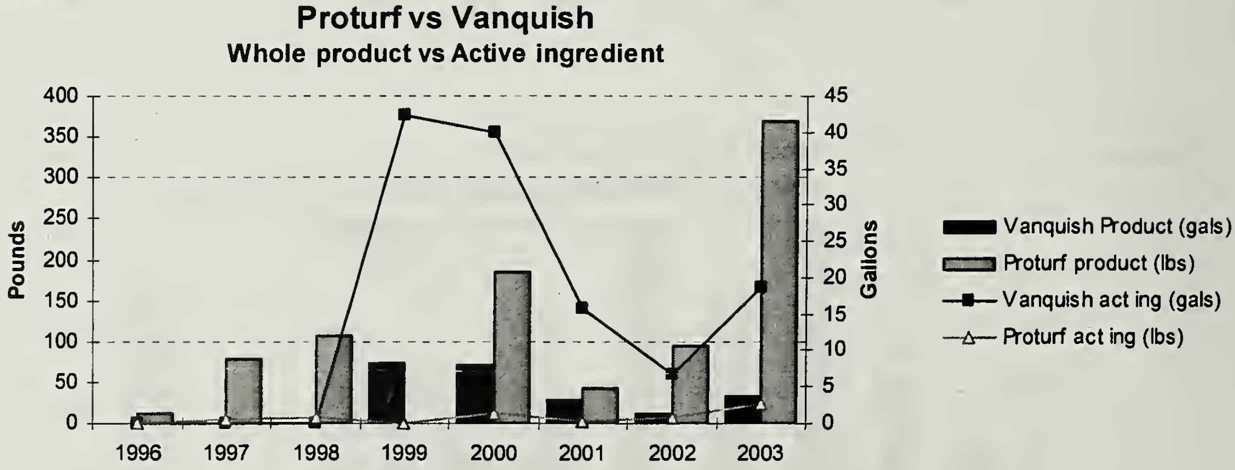
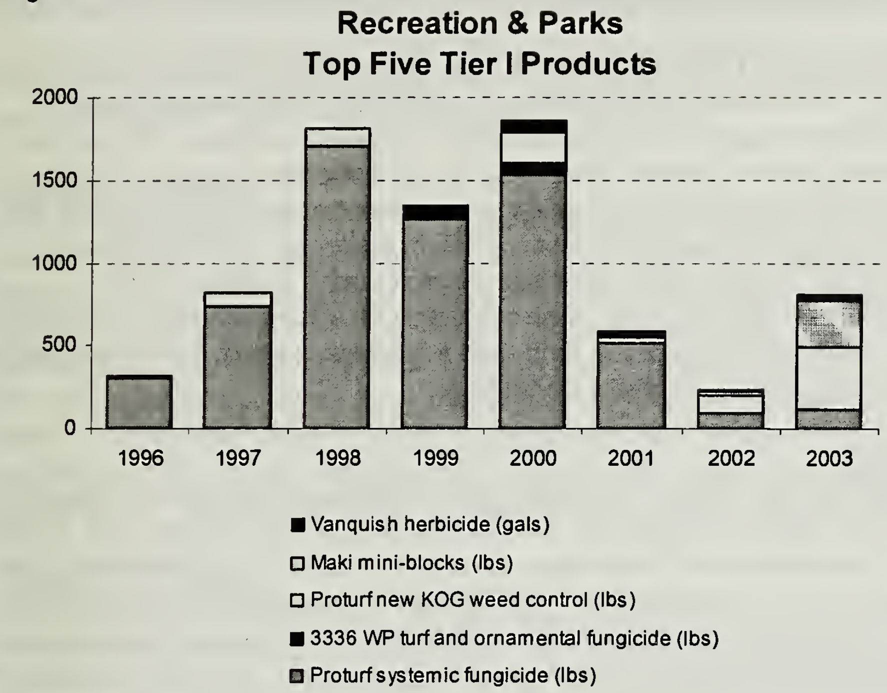


Figure 50


Recreation & Parks
Top Five Tier I Products
2000
1500
1000
500
0
1996
1997
1998
1999
2000
2001
2002
2003
■ Vanquish herbicide (gals)
☐ Maki mini-blocks (lbs)
☐ Proturf new KOG weed control (lbs)
■ 3336 WP turf and ornamental fungicide (lbs)
▨ Proturf systemic fungicide (lbs)

San Francisco International Airport

San Francisco International Airport (SFIA) is unique among City departments in that the airport leases much of its property to a wide variety of tenants, ranging from large hangars leased to major airlines to small booths rented to food vendors. SFIA maintains a contract with Applied Pest Management to perform most of its pesticide application and routine pest management services. However, the individual tenants often maintain separate contracts with their own PCO vendors, or perform pest management activities themselves. In addition, SFIA has various agreements with other agencies, notably CalTrans, to manage pests and weeds on their properties. Finally, large parts of the airport are subject to stringent FAA regulations governing weed height, fire hazards, and bird populations. Within such a complex context, communication and coordination of pest management efforts are a challenge.

Trends in Amounts Used

SFIA pesticide use fell dramatically from 1996 to 2001, with a 82% reduction in total pounds used and an 88% reduction in gallons (Figure 51). However, pesticide use bounced back in 2002 and 2003. In pounds, the largest share of the increase since 2001 was in Tier III (least hazard) products such as mosquito larvicides and slug bait. The use of glyphosate-based herbicides (such as Roundup® - Tier II) and rodenticides (mostly Tier I) also increased during this period, due in part to the installation of new freeway landscaping in 2001. In terms of raw poundage, the total pesticide reduction since 1996 now stands at 27%, with a 74% reduction in gallons.

In 2003, the most-used pesticides were:

Contrac All-Weather Blox (Tier I)	65.6 lbs. (out of 153.9 lbs. total)
Vectobac-G Biological Mosquito Larvicide (Tier III)	53 lbs. (out of 153.9 lbs. total)
Roundup Pro Herbicide (Tier II)	43.2 gals. (out of 55 gals. total)
Golden Bear Mosquito Larvicide GB-1111 (Tier II)	3.8 gals. (out of 55 gals. total)

RoundUp Use

Total herbicide use has increased since 2002, with Roundup® use remaining approximately the same (Figs. 52&53). While use has decreased 91% since 1996, there was a 35% increase between 2002 and 2003. This increase can be explained by the expansion of the airport's landscaped areas, which have approximately tripled since 2000. There has not been a proportional increase in personnel available to do manual weed cutting. A considerable portion the new acreage is along freeways, where spraying is sometimes preferable to manual cutting for safety reasons. SFIA staff are experimenting with the use of goats for vegetation management, higher tolerance levels for weeds, and weed whacking as ways to reduce herbicide use. However, staff predicted that Roundup use will continue to increase somewhat due to SFIA runway expansion, budgetary restrictions, and FAA regulations pertaining to weeds on airfields.

Rodenticide Use

As with citywide rodenticide use, rodenticide use figures reflect redoubled efforts at rat control, exacerbated by the airport's growth (Fig. 53). Rodenticide use increased by 40% between 2002 and 2003, mostly *Contrac all weather blocks* with an active ingredient of bromadiolone. Although many sanitation measures have been implemented (such as ensuring that refuse containers are tightly covered), the complex leasing arrangements at SFIA sometimes limit the ability of airport pest management staff to implement adequate pest prevention efforts. Problem areas include the taxi waiting area and loading docks which, despite SFIA's repeated requests for sanitation, continue to be a food source problem for rodents and birds. The best strategy SFIA has found to manage rodent populations in these areas is baiting. The use of rodenticides (Tier I) by SFIA is therefore predicted to continue. (In response to concerns over increased rodenticide use citywide, SFE plans to revise its rodent IPM plans.)

Mosquito Control

The use of mosquito larvicides increased from almost none in 2002 to 61 pounds/3.8 gals in 2003 (Fig. 55). The increased emphasis on West Nile virus containment, and the important role played by airports in the spread of mosquito-vectored diseases, accounts for the increase. Most of these treatments involved Vectobac-G and Mosquito Dunks, both Tier III products. Both have the bacteria *Bacillus thuringiensus* as the active ingredient, and are applied directly to water to kill mosquito larvae. Some SFIA marshlands are home to the endangered San Francisco garter snake, and therefore require special precautions by land managers. SFIA maintains an agreement with the San Mateo County Mosquito Abatement District to treat parts of its marshland by helicopter, and these treatments are expected to increase in coming years.

Trends in Toxicity

Rodenticides are the only Tier I product used by SFIA, but—due to reasons mentioned above—use of these products has increased (Fig. 56). Because of the predicted continuation of the rodent problem in selected areas mentioned above, the use of this Tier I product by SFIA is expected to continue.

As in previous years, the vast majority of Tier II product use was for weed control on rights-of-way, primarily using Roundup Pro (Fig. 57). However, the proportion used on rights-of-way in 2003 decreased from 98% to 61% due to increases in pesticide use for public health and landscaped areas. Vectobac-G and Mosquito Dunks account for almost all of Tier III pesticide use (Fig. 58). Usage of these products has increased recently and is expected to remain high.

Table 11. Pesticide Products Used by SFIA, 2003

Product	Hazard Tier	EPA Reg Number	Amnt Used
Oust XP Herbicide by DuPont	II	352-601-AA-352	8.6094 lbs
Pendulum WDG herbicide	II	241-340-AA-241	8.2938 lbs
Mosquito dunks	III	6218-47-ZB-6218	7.5 lbs
Contrac all-weather blox	I	12455-79-AA-12455	65.5625 lbs
Oust weed killer by DuPont	II	352-401-AA-352	6.25 lbs
Vectobac-G biological mosquito larvicide	III	275-50-AA-275	53 lbs
Roundup Pro herbicide	II	524-475-ZA-524	43.22 gals
Golden Bear Mosquito Larvicide GB-1111	II	8329-72	3.8302 gals
Garlon 4	II	62719-40-ZB-62719	3.6391 gals
Eaton's answer for control of pocket gophers	II	56-57-AA-56	3.5 lbs
Rodeo aquatic herbicide	II	524-343-AA-524	3.0 gals
M-PEDE Insecticide	II	53219-6-AA-53219	1.6523 gals
Maxforce roach bait F.05	II	64248-11-AA-64248	0.4063 lbs
TEMPO 20 WP Insectide	I	3125-380-AA-3125	0.3275 lbs
Fluorguard ant control baits	III	1812-348-AA-279	0.279 lbs
Trifluralin (aka Niban bait)	II	64405-2-AA-64405	0.125 lbs
PT brand avert cockroach	II	499-406-AA-499	0.0371 gals
CMR Herbicide activator	III	64218-14	0.0352 gals
Avert cockroach gel	II	499-410-AA-499	0.0234 gals
Drax ant kil gel	II	9444-131-AA-9444	0.0234 gals
Whitmire avert prescription treatment 32	II	499-394-AA-499	0.0195 gals
Maxforce IBF4 Carpenter Ant Bait	II	64248-21	0.0137 gals
Turflon ester	II	62719-258-AA-62719	0.0137 gals
Precor 1% emulsifiable concentrate	II	2724-352-AA-50809	0.0117 gals
Avert prescription treatment 310		499-294-AA-499	0.0112 lbs

San Francisco International Airport – Pesticide Use Graphs

Figure 51

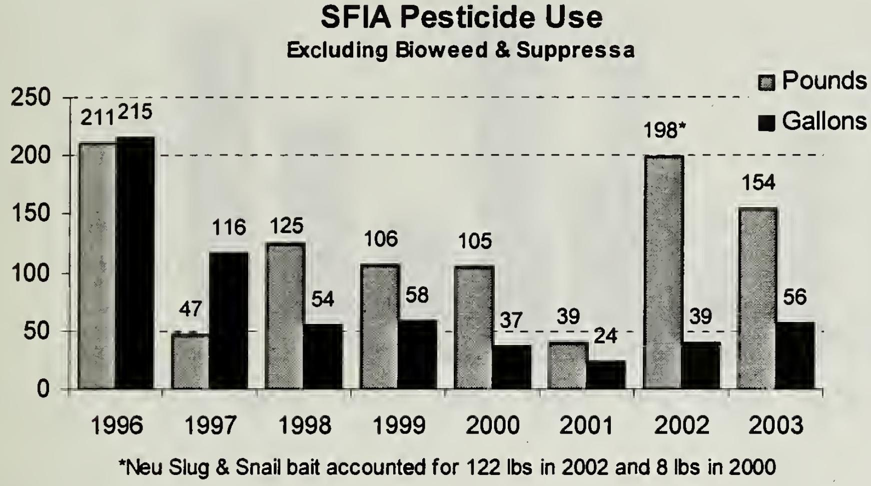


Figure 52

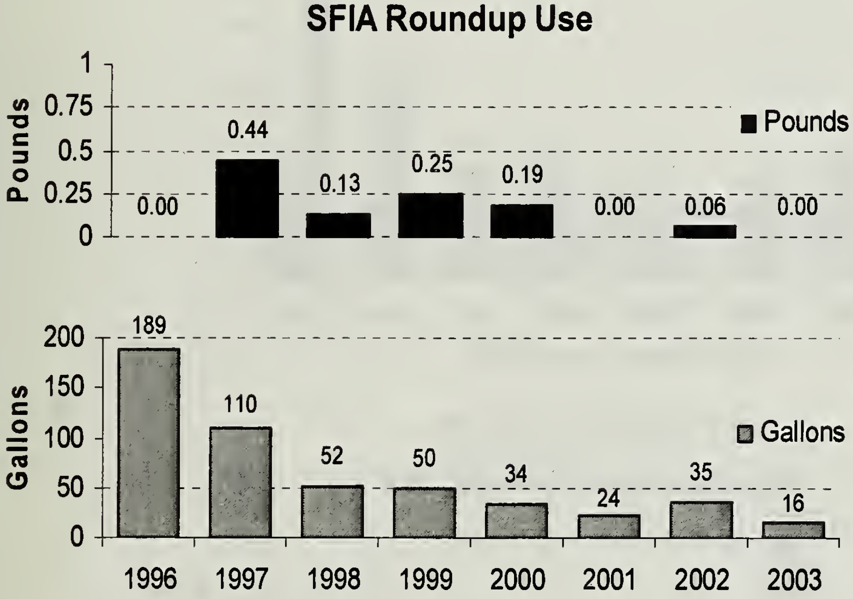


Figure 53

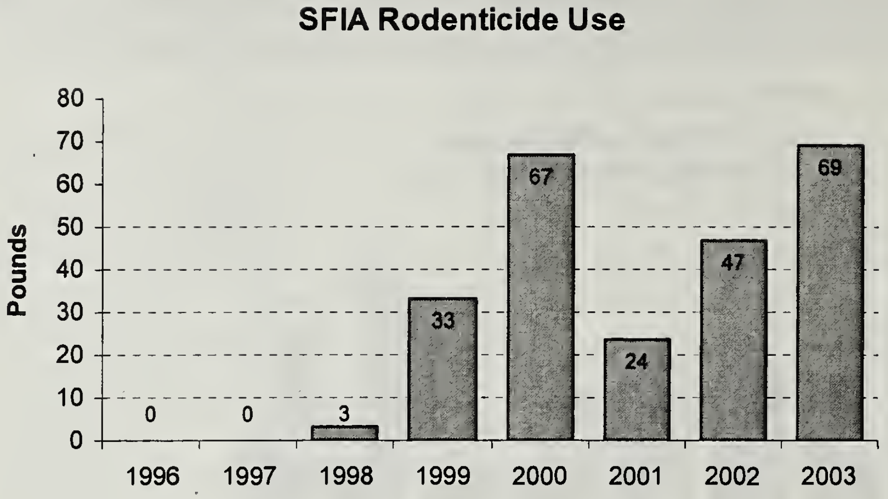
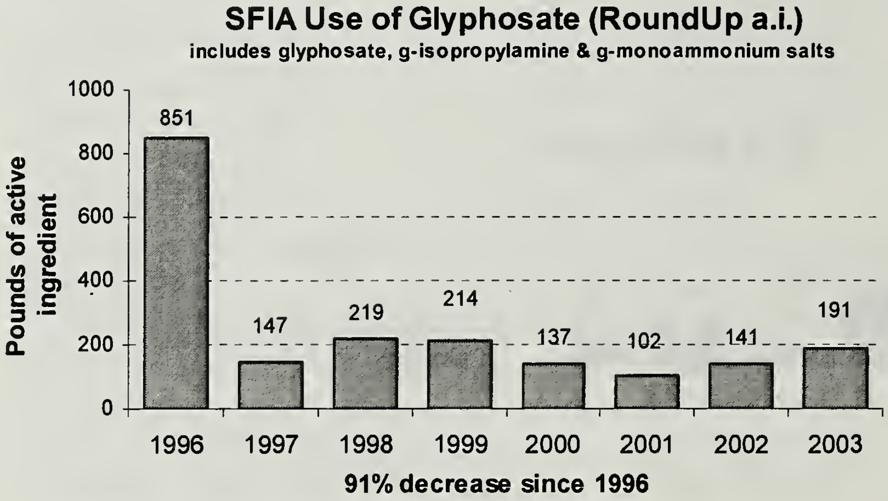

SFIA Rodenticide Use

Figure 54


SFIA Use of Glyphosate (RoundUp a.i.)

includes glyphosate, g-isopropylamine & g-monoammonium salts

91% decrease since 1996

Figure 55

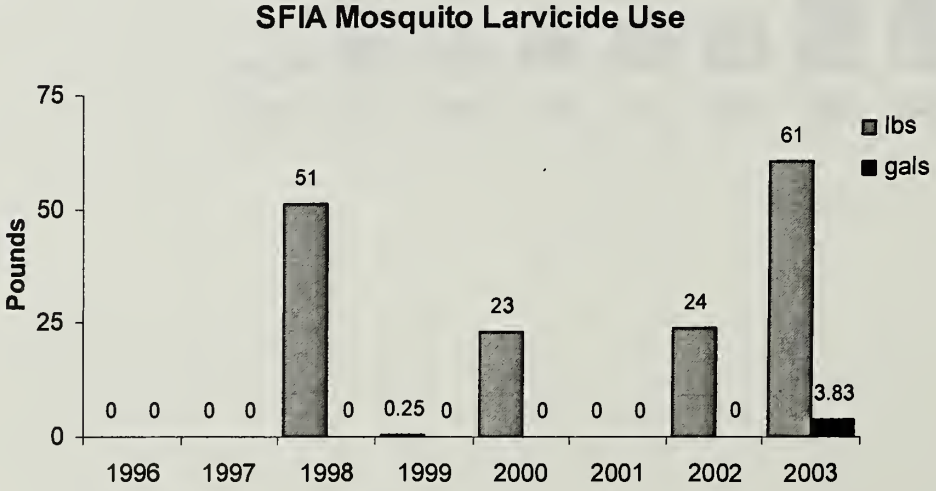

SFIA Mosquito Larvicide Use

Figure 56

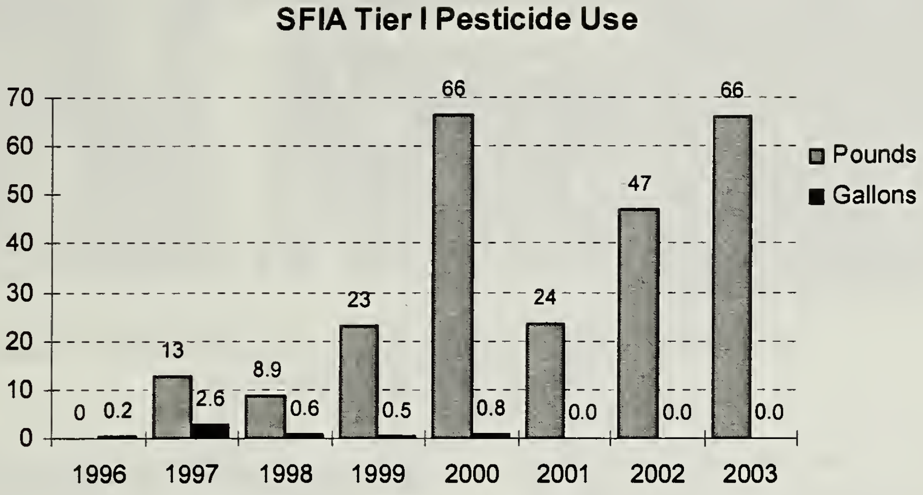


Figure 57

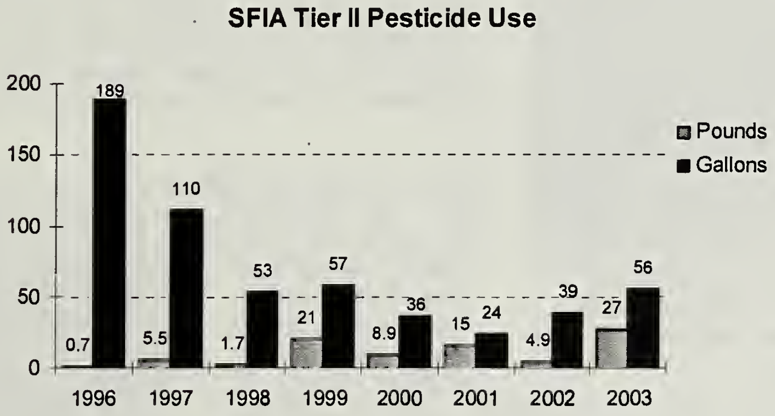
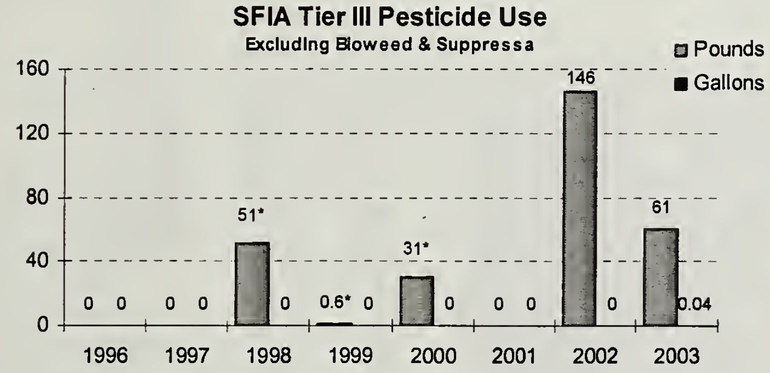


Figure 58



*Does NOT include:
Suppressa 1000 lbs in 1998 & 2200 lbs in 1999, Bioweed 800 lbs in 2000

Attachments – Integrated Pest Management Program Annual Report - 2003

Attachment A: 2004 San Francisco Reduced Risk Pesticide List

Attachment B: Prototype San Francisco IPM Program Newsletter

SF IPM News

Published by: San Francisco Department of the Environment
Prototype Edition May 2003

Corte Madera Waipuna Demonstration

The San Francisco IPM TAC was invited to the Town of Corte Madera, Marin County, to see a demonstration of the Waipuna Hot Water Weeding System. The unique aspect of this demonstration was that no company representatives were present so the staff spoke freely on the merits and drawbacks of using the system so far.

Deanna Simon operates the Waipuna in a shrub area. In 48 hours weeds were dead and dessicated.

Corte Maderas IPM Policy has been in effect for about 1 year. They continue to search for alternatives to pesticide use. The Waipuna is part of their program for maintenance of medians on city streets. Other alternatives being explored are competitive planting, paving of narrow medians, altering pruning techniques to shade out weeds, mulching, weed-whipping, hand removal, weed mats, and use of herbicides. Landscape staff are currently testing EcoExempt HC Herbicide for non-noxious weeds, using Roundup Pro only for nutsedge, field bindweed, and bermudagrass until these weeds are brought under control.

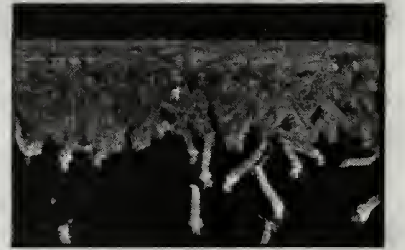
Bermuda grass and groundsel growing in a median strip along Paradise Drive. Narrow lanes and 45mph traffic speeds make this area dangerous for staff.

Part of the reason that Corte Madera is putting emphasis on the medians is because of the inherent danger to staff while working on these narrow strips. Traffic on some of the roads travels from 35 to 50 miles per hour, although as you may have gusessed the posted speed limits are from 25 to 40. In some situations, lanes are blocked off to protect staff, but this often causes traffic tie-ups and so lane closure is used as sparingly as is possible.

Edging done by Waipuna is neat and even 48 hours following application of hot water and foam. No drift or kill beyond the border of the edging was seen following application

Corte Madera has plans to expand the use of the Waipuna to selected areas where time is not a significant factor.

Female mosquitos must have a blood meal (top right) to reproduce. This mosquito is feeding on a human, but mosquitos feed mainly on birds and small animals. Mosquitos can pass a disease from an animal host to humans, WNV being one example.



A huge population of mosquito larvae (bottom right). Mosquito life cycles can be short, 3 days for some species under optimum conditions.

West Nile Virus Presentation at Annual Safety Training

The San Mateo Country Mosquito Abatement District (SMCMAD) gave West Nile Virus (WNV) presentations at all four SF IPM & Safety training sessions in April. Originally scheduled for an hour, questions from attendees stretched the presentations to almost 2 hours. The presenters, Dr. Chindi Peavey, Sasha Porshnikoff, and James Counts, also covered other vector borne diseases that occur in the Bay Area including plague, lyme disease, hanta virus, and encephalitis.

WNV is expected to be found in native populations of mosquitos (*Culex pipiens*) and birds this year in California. That is why mosquito abatement is so important for all of us. We can make sure that standing water is removed wherever possible. Report larger seasonal pools to your PCA so that actions can be taken to mitigate any mosquito problems.

Birds are a carrier of the infection. The district has set up monitoring flocks to track this and other diseases. SMCMAD has a program to test dead birds for the presence of the virus. Report all dead birds to them as soon as they are found. Birds must be dead less than 24 hours for the virus to be found.

A WNV brochure and other interesting information on vector borne diseases is available at their website: http:www.smcmad.org , follow the links to find the information you want. The site has links to other sites with related information.

Thanks again to Dr. Chindi Peavey, Sasha Porshnikoff, James Counts and the staff at SMCMAD for their great work and their assistance.

Upcoming Training:

Training sessions are currently being planned for the Green Flamer.

Conservatory to Reopen

The Conservatory of Flowers, closed following the Loma Prieta earthquake in October 1989, will reopen after 14 years. Extensive renovations were required to make the conservatory safe for visitors.

The victorian style conservatory suffered glass and structural damage during the earthquake. The staff has worked to keep the collections alive and healthy during the renovations, no small task. A new greenhouse, built in 2000, was used to store some of the tropical plant materials during the renovation process.

Ralph Montana handled the pest management duties at the conservatory during the renovation. His project to reduce or eliminate ants met with mixed results, but his cockroach control efforts made great strides.

We're all looking forward to the conservatory reopening and wish the entire staff there all the best.

Ask the Pest People

Q: *How will the late rains affect pest populations?*

A: Late rains will probably increase some diseases, anthracnose on Sycamores for one. Late rains can cause fungi to attack insects in more lethal amounts. In Marin County, warm winters with late rains have sometimes reduced Elm leaf beetles to unusually low levels.

Got a pest problemor want more info on a new management tactic, tool, or technique? Share your questions with staff by addressing questions to: **Robin Breuer**, City Toxics Reduction Coordinator, SF-DOE, Phone: 415/355-3759

San Francisco IPM Program Kudos

Thanks to everyone who participated in the San Francisco Flower & Garden Show. Once again you have made the booth a success. It is one of the venues for public outreach that really works.

Thanks to all of the TAC members that attended the Waipuna demonstration in Corte Madera. The Corte Madera program is only a year old and our support for our North Bay neighbors is greatly appreciated by all.

Annual Use Report Deadline Approaches

Robin Breuer and Deanna Simon need your annual use reports by June 15th in order to prepare the fiscal year 2002-2003 pesticide use statistics. This report shows use for the past year and compares it to previous years' useage.

The data in this report is one of the gauges used to determine the success of the IPM Program in San Francisco. Please get your information to Robin and Deanna before the deadline.

DEPARTMENT OF THE ENVIRONMENT
CITY AND COUNTY OF SAN FRANCISCO
JARED BLUMENFELD, DIRECTOR

Integrated Pest Management Program
Reduced Risk Pesticide List

January 2004

Preamble

The following list represents the pesticide products approved for use under San Francisco's Integrated Pest Management Ordinance (Adopted 10/96, Section 39.8(f), San Francisco Municipal Code). The list will be updated on an as-needed basis to reflect the availability of new reduced risk products and the removal of products with the greatest human health and environmental concern. Products are designated as Allowed (A), Limited Use (L), and Limited Use of Special Concern (L*). Each limited use product is accompanied by the specific circumstances under which it is approved for use. In all cases, restrictions on use as determined by the label are to be followed as required by law.

Integrated Pest Management (IPM) Programs involve a number of elements to control pests while ensuring a safe working and play environment. Chemical pesticides represent only a single control strategy and are used only as a last resort. Thus all chemicals included in the Adopted List are assumed to be used only after programs are in place to improve sanitation, prevent pest infestation, and implement non-chemical management measures. If such a pest management program proves insufficient to control a pest then the chemicals listed below may be utilized as tools according to the restrictions specified for each pesticide product.

San Francisco's IPM ordinance allows for chemicals to be used that are not on the Adopted List through an exemption process. The Department of the Environment reviews all exemption requests and exemptions will only be granted in cases of well-documented need for the pesticide and when all other alternatives have been tried or deemed impractical. In addition, requesting departments must develop a pest management plan for preventing further use of the pesticide.

One important goal of an IPM program is to reduce the unnecessary use of chemical pesticides. In relation to this goal, the term, *targeted application,* refers to pesticides applied only to the pest and not to adjacent non-targets. Several products on the Adopted List, specifically pre-emergent herbicides, fungicides, and some post-emergent herbicides are used in broadcast applications where the product is spread over an entire area and not just onto the targeted pests. Although these products currently meet the reduced risk criteria, their use is of special concern in an IPM program. It is the goal of the IPM program to phase out the use of these products and departments who use them will be expected to track their use closely, develop alternative control strategies and justify the continuing need for these products at the end of the year.

11 Grove Street, SAN FRANCISCO, CALIFORNIA 94102
WWW.SFENVIRONMENT.COM
TELEPHONE (415) 355-3700 FAX 554-6393 E-MAIL: ENVIRONMENT@SFGOV.ORG

Site-Specific Rodenticide Plan For Control of Rats and Mice. 12/8/99

Due to the concern over primary and secondary poisoning the type of rodenticide and the manner in which it is applied will be determined by the general site characteristics.

Landscaped area: area under cultivation

Natural area: within urban setting or wilderness, significant wildlife concern

Primary poisoning: non-target animal eats poison directly

Secondary poisoning: non-target animal eats poisoned target animal as prey

General Site Description	Rodenticide Use
Interior of structures with occupants (i.e. office space, recreation sites)	Trapping only.
Interior of non-enclosed structures (i.e. storage, stables, airport service areas)	Secure and anchored bait stations can be placed inside on a preventative basis. Single feeding OK especially when other sources of food are present and when have public health concerns (ex. Hanta)
Exterior of structures in urbanized areas (i.e. perimeter of offices)	Secure and anchored bait stations around perimeter, single feeding OK but use Brodifacoum as last resort. No broadcast baits or pellets. Use mouse sized pellets only, must be placed far into burrows.
Exterior of structures in natural areas	Multiple feeding baits secured within bait boxes or buried in burrows. No pellets. Single feeding bait used only as last resort in case of human health concern or structural integrity.
Inside of sewers or sewage treatment facilities	Baits must be secured either inside the sewer or inside a bait box. Any single feeding OK.
Landscape not adjacent to a natural area	Bait placed deep inside burrows, minimize use of pellets, mouse sized pellets only, must be buried deep in the burrow. Use Brodifacoum as last resort.
Natural area or landscape adjacent to a natural area	Baiting should be limited to sensitive sites (ex. campfire area) otherwise emphasis is on preventing infestation of structures. Multiple feeding baits that are secured inside bait boxes or burrows. No use of pellets or single feeding rodenticides.

Pesticide Type W=herbicide in water F=fungicide I= insecticide H=herbicide M=molluscicide V=vertebrate A=adjuvant P=plant hormone	Use Category A = allowed L= limited L* = special concern	Hazard Tier *=highest hazard, ***=lowest hazard, /=insufficient data	Product Name	Active Ingredients	EPA Reg #	Use Limitations	Amount used in 2002
I	L	*	20 Mule Team Tim-Bor Industrial	disodium octaborate	1624-39-ZC-1624	For control and prevention of termites,wood-destroying beetles, and carpenter ants. Recommendation of Branch III pest control operator required for termites and beetles; recommendation of Branch II pest control operator required for carpenter ants.	977.5 lbs
F	L*	*	3336 WP	methyl thioallophanate	1001-63-AA-1001	For use in greenhouse situations only	4.8 lbs
I	L	**	Agnique MMF	isooctadecyl-hydroxyl	2302-14-AA-2302	Standing water, human health concerns.	277.4 lbs + 0.92 gals
I	L	**	Altosid Briquets by Zoecon	methoprene	2724-375-ZA-2724	PUC for contained sewage treatment facilities. For public health use. Not for use in estuarine environments.	
I	L	**	Altosid Pellets by Zoecon	methoprene	2724-488-ZA-2724	Not for use in estuarine environments	
F	L	/	AQ 10 Biofungicide	Ampelomyces	55638-16-AA-55638	Nurseries, roses, dahlias for powdery mildew. More information is needed an active ingredient.	
W	L	**	Aquamaster Herbicide (equivalent to Rodeo)	Glyphosate	524-343-ZF	May damage non-target plants. Use for emergent plants in ponds, lakes, drainage canals, and areas around water or within watershed areas. Only as a last resort when other management practices are ineffective. NOTE: Equivalent to "Rodeo Emerged Aquatic Weed and Brush Herbicide," an older product. Rodeo in storage may be used under the same limitations.	
W	A	***	Aquashade	acid yellow-23,acid blue 4	33068-1-AA-33068		16 gals

Pesticide Type	Use Category	Hazard Tier	Product Name	Active Ingredients	EPA Reg #	Use Limitations	Amount used in 2002
I	A	**	Avert Cockroach Bait Station	abamectin	499-467-AA-499		
I	A	**	Avert Cockroach Gel	abamectin	499-410-AA-499		0.03 gals
I	L	**	Avid 0.15 EC	avermectin	618-96-AA-618	Nursery use only.	0.30 gals
I	L	**	Azatin XL	Azadirachtin	70051-27-AA-59807	Nurseries and established plants for interiorscapes.	0.01 gals
H	A	***	Bio-Weed	corn gluten meal	1051098-30001-AA-1051098		
I	L	**	Borid	boric acid	9444-129-ZA-9444	limit human exposure to dust	
I	L	***	BotaniGard ES	Beauveria bassiana strain	65626-8-ZA-65626	Control of thrips on landscaped plants. Biological product but some concern over bee toxicity.	1.96 gals
I	A	***	Cinnamite	Cinnamaldehyde	58866-12-ZA-65626		0.03 gals
A	A	***	CMR Silicone Surfactant	polymethylsiloxane, nonionic	1050775-50025-AA-1050775		
I	L	*	Conserve SC	Spinosad	62719-291	For use as a last resort in greenhouses. If feasible, alternate with other products to avoid the development of resistance.	
V	L	*	Contrac All-Weather Blox	bromadiolone	12455-79-AA-12455	High concern over 2nd poisoning, see site specific limits.	46.81 lbs
P	A	***	Dip'n Grow	indole-3-butyric acid	64388-1-AA-64388		
V	L	**	Ditrac supersize blox	diphacinone	12455-14-ZA-12455	Concern over 2nd poisoning, see site specific limits.	1119 lbs
V	L	**	Eaton's All-Weather Bait Blocks Rodenticide with Apple Flavorizer	diphacinone 0.005%	56-41-ZA-56	Concern over 2nd poisoning, see site specific limits.	
H	L	/	EcoExempt HC	Eugenol (clove oil) 21.4%, 2-phenethyl propionate 21.4%	Exempt from EPA Reg.	Pending receipt of clove oil toxicity data, do not use in enclosed areas.	
I	A	***	EcoExempt IC	Rosemary oil 10%; wintergreen oil, mineral oil (inerts)	Exempt from EPA Reg.		
I	L	***	Enstar II Insect Growth Regulator	kinoprene	2724-476-AA-2724	Nurseries, roses.	

Pesticide Type	Use Category	Hazard Tier	Product Name	Active Ingredients	EPA Reg #	Use Limitations	Amount used in 2002
H	L	**	Ezject Selective Injection Herbicide	glyphosate	524-435-AA-524	Tree stump injection especially where resprouting is likely, prefer mechanical methods when possible such as stump grinding	0.19 lbs + 0.002 gals
V	L	*	Final Blox	brodifacoum	12455-89-AA-12455	Extreme concern over 2nd poisoning, see site specific limits	
H	L	**	Garlon 4	triclopyr	62719-40-ZB-62719	Targeted treatment of invasive exotics in parks, natural areas, right of ways. OK for fuel reduction, pilot alternative strategies.	19.30 gals
I	L	/	GC-Mite	Cottonseed oil 40%, clove oil 20%, garlic extract 10%	Exempt from EPA Reg.	Pending receipt of clove oil toxicity data, limit use in enclosed areas.	
V	L	/	Generation Mini-blocks	diethialone	7173-206-AA-7173	Unknown effects on 2nd poisoning, single feed,	
I	A	/	Gentrol IGR Concentrate	hydroprene	2724-351-ZA-2724		
I	L	**	Golden Bear Mosquito Larvicide GB-1111	Aliphatic Petroleum Hydrocarbon	8329- 72-AA	Apply only in conjunction with appropriate prevention measures (such as increasing water flow), or when prevention measures are impractical. Use within requirements on vector control activities set by the Calif. Dept. of Health Services.	
V	L	**	Gopher Getter type 2 Bait by Wilco	chlorophacinone	36029-50003-AA-36029	Damage to: dams, levies, athletic fields, active recreation areas, structures, high cultural value or landmark areas. Public Health concerns.	1.49 lbs
I	A	**	Gourmet Liquid Ant Bait	Disodium octaborate tetrahydrate (DOT) (2%)	73766-1-AA		
F	L*	*	Heritage Fungicide	azoxystrobin	10182-408-AA-10182	Consider/emphasize use of compost tea for preventative. To be used only as a spot treatment on greens, highest profile athletic fields. Improve aeration and monitoring programs.	2.00 lbs

Pesticide Type	Use Category	Hazard Tier	Product Name	Active Ingredients	EPA Reg #	Use Limitations	Amount used in 2002
I	A	***	Hot Pepper Wax Insect Repellent	capsaicin .00014%	67238-1-AA-67238		
I	A	***	Javelin WG	*Bacillus thuringiensis*	70051-66-AA-70051		
V	L	**	JB Eaton Top Gun All-Weather Bait Block Rodenticide	bromethalin	67517-66-56	Limited use to avoid rodent aversion to one specific bait. Use only in locked bait stations. High concern over secondary poisoning of birds.	
F/I	A	**	JMS Stylet Oil	petroleum distillates	65564-1-AA-65564		4.06 gals
V	L	**	JT Eaton Answer for the Control of Pocket Gophers	diphacinone	56-57-AA-56	Damage to: dams, levies, athletic fields, active recreation areas, structures, high cultural value or landmark areas. Public Health concerns.	304 lbs
F	A	***	Kaligreen	potassium bicarbonate	70231-1-AA-70231		1.97 lbs
V	L	*	Maki Mini Blocks	bromadiolone	7173-202-AA-7173	High concern over 2nd poisoning, see site specific limits	28.38 lbs
V	L	*	Maki Paraffin Blocks	bromadiolone	7173-189-AA-7173	High concern over 2nd poisoning, see site specific limits	
I	L*	*	Marathon 1% Granular Greenhouse and Nursery	imidacloprid	3125-452-AA-59807	Nursery use for control of white fly, not for use in propagation beds.	19.75 lbs
H	L	/	Matran 2	clove Oil	Exempt from EPA Reg.	Pending receipt of clove oil toxicity data, do not use in enclosed areas.	
I	L	**	Maxforce FC Professional Insect Control Ant Bait Stations	fipronil	64248-10-ZA-64248	Minimize use through prevention, possible concern over active ingredient.	
I	L	**	MaxForce FC Professional Insect Control Ant Killer Gel	fipronil .001%	64248-21-ZA	Minimize use through prevention, possible concern over active ingredient.	

Pesticide Type	Use Category	Hazard Tier	Product Name	Active Ingredients	EPA Reg #	Use Limitations	Amount used in 2002
I	L	**	Maxforce FC Professional Insect Control Roach Bait Stations	fipronil	64248-11-ZA-64248	Minimize use through prevention, possible concern over active ingredient.	0.03 lbs
I	L	**	Maxforce IBF4 Carpenter Ant Bait	fipronil	64248-21-ZA-64248	Minimize use through prevention, possible concern over active ingredient	
I	L	**	Maxforce Roach Killer Bait Gel	fipronil	64248-14-AA-64248	Minimize use through prevention, possible concern over active ingredient	0.51 lbs + 0.03 gals
I	A	***	Mosquito Dunks	Bacillus Thuringiensis	6218-47-ZB-6218		1.22 lbs
I	L	**	M-pede Insecticide/Fungicide	potassium salts /fatty acids	53219-6-ZC-53219	Nursery, specialty gardens, and Africanized Honey Bees.	6.60 gals
I	L	**	Niban Granular Bait	orthoboric acid	64405-2-AA-64405	Outdoor restricted to planted areas, prefer containers; indoor must be in containers or inaccessible to humans	
I	L	***	Orange Guard	d-limonene	61887-1-AA-61887	Contact insecticides should be minimized especially indoors.	0.25 lbs + 0.03 gals
H	L	**	Oust XP Herbicide by DuPont	sulfometuron-methyl	352-601-AA-352	Rights of ways.	2.63 lbs
H	L*	**	Pendulum WDG Herbicide	pendimethalin	241-340-AA-241	One year limit. SFIA landscape use only. Use weed cloth whenever possible. Limit to high priority areas, including new plantings in hazardous areas too dangerous for handweeding. Renovations require exemption.	2.33 lbs
I	A	***	Pharorid	methoprene	2724-420-ZA-2724		
I	A	**	Prescription Treatment Brand Advance Liquid Ant Bait	Boric acid 1%	56- 72-AA- 499		

Pesticide Type	Use Category	Hazard Tier	Product Name	Active Ingredients	EPA Reg #	Use Limitations	Amount used in 2002
H	L*	*	Proturf New K-O-G Weed Control	dicamba	538-112-AA-538	One year limit. Spot application on greens only when hand-weeding is not feasible. Only for *Soliva sessilis* and *Cotula mexicana* in golf greens.	95.5 lbs
F	L	*	Proturf Systemic Fung.	thiophanate-methyl	538-88-ZB-538	Greens, highest profile athletic fields.	93 lbs
I	L*	*	PT Brand Ultra-Fine Oil	paraffinic oil	862-23-ZA-862	One year limit. Nursery and roses control of scale. Try Saf-T-Side and Spraytech oil as replacement.	
I	L	**	PT Brand Wasp-Freeze Wasp and Hornet Killer Formula 1	phenothrin, allethrin, CO2	499-362-ZA-499	Use only when a concern for public safety.	20.96 gals
I	A	***	Roach Terminal	oxypurinol, xanthine	1001-73-AA-1001		
F	A	/	Root Shield Drench	*Trichoderma harzianum*	68539-4-ZB-68539		
F	L*	*	Rootone Rooting Hormone	Thiram	264-499-AA-71004	Nursery use only. Problem with mixing and storage due to talc. Consider Dip'n Grow as alternative.	0.125 lbs
H	L	**	Roundup Pro Herbicide	glyphosate	524-475-ZA-524	Spot application of areas inaccessible or too dangerous for hand methods, right of ways, utility access, fire prevention. Use for cracks in hardscape and edging only as last resort. OK for rennovation but must put in place weed prevention measures.	231.16 gals
H	L	**	Roundup ProDry	glyphosate	524-505-AA-524	same limitations as Roundup Pro	50 lbs + 0.53 gals
I	L	**	Saf-T-Side	paraffinic oil	48813-1-AA-48813	Trace of alkyl-phenol ethoxylates, avoid contact with surface waters.	
F	A	/	Serenade	Bacillus subtilis	69592-4-AA-69592		
M	A	***	Sluggo Slug and Snail Bait	iron phosphate	67702-3-AA-67702		
W	L	**	Sonar A.S.	fluridone	67690-4-AA-67690	Emergent plants in ponds, lakes, drainage canals. Only as a last resort when other mgmt. practices are ineffective.	

Pesticide Type	Use Category	Hazard Tier	Product Name	Active Ingredients	EPA Reg #	Use Limitations	Amount used in 2002
A	A	***	Spraytech Oil	soybean oil	65328-50001-AA-65328		5.75 gals
H	A	***	Suppressa	corn gluten meal	1051074-30001-AA-1051074		30 lbs
V	L	*	Talon-G Rodenticide Mini-Pellets (Contains Bitrex)	brodifacoum	10182-341-AA-10182	Extreme concern over primary and 2nd poisoning, see site specific limits.	15 lbs
I	L	**	Terro Ant Killer II Liquid Ant Baits	sodium tetraborate	149-8-ZB-149		2.46 gals
I	L	**	The Ecology Works Dust Mite and Flea Control	Disodium octaborate tetrahydrate (DOT) (98%)	67419- 1-ZB	For flea and dust mite control when mechanical methods are impractical, in conjunction with prevention. Limit human exposure to dust.	
H	L	**	Turflon Ester (post)	triclopyr	62719-258-AA-62719	Targeted treatment of turf; broadcast application requires exemption	1.81 gals
F	A	/	TurfShield	Trichoderma strain	68539-3-ZC-68539		568 lbs
I	A	**	Uncle Alberts Ant Bait	Disodium Octaborate Tetrahydrate	73340-1		
F/I	A	**	Valent Volck Supreme Spray	petroleum oil	59639-20-AA-59639		0.78 gals
I	A	***	Vectobac-G Biological Mosquito Larvicide	Bacillus Thuringiensis	275-50-AA-275		129 lbs
V	A	***	Vectolex G Biological Mosquito Larvicide	bacillus sphaericus	275-77AA-275		46.04 lbs
V	L	*	Weatherblok Bait with Bitrex	brodifacoum	10182-339-AA-10182	Extreme concern over 2nd poisoning, see site specific limits	663.83 lbs

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: July 26, 2005 **ITEM NO. 7**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Implementation Report on the Arsenic Treated Wood Ordinance & Attachments

☒ Chapter 13 Environment Code

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'This list reflects the explanatory documents provided.

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100% Post-Consumer Content

IMPLEMENTATION REPORT TO COMMISSION ON THE ENVIRONMENT ARSENIC TREATED WOOD ORDINANCE

July 26, 2005

BACKGROUND:

In February 2003 the Board of Supervisors passed an ordinance banning the City's purchase and use of preservative-treated wood containing arsenic, a known human carcinogen. This legislation, commonly known as the Arsenic Treated Wood ordinance (Chapter 13 of the Environment Code), consists of the following requirements:

- All City Departments and Contractors are to purchase preservative-treated wood only from the list of environmentally preferable alternatives adopted by the Department of the Environment;
- All City Departments that own or maintain play structures, park equipment or other facilities constructed with preservative-treated wood containing arsenic to undertake certain actions, including conducting an inventory of structures containing arsenic with a high likelihood of human contact, and developing a management plan to replace and seal these structures;
- City departments to dispose of preservative-treated wood containing arsenic at approved landfills;
- Department of Building Inspection and the Department of the Environment are directed to report to the Commission on the Environment on a possible citywide ban on preservative-treated wood containing arsenic.
- Department of the Environment shall report to the Commission on the Environment on the programs mandated by this Chapter;

As required by the ordinance, this report summarizes the progress of the programs mandated by this ordinance. If approved, the Department, on behalf of the Commission on the Environment, shall submit this report to the Board of Supervisors for review.

In September 2003, the Department reported to the Commission on the Environment on the City departments' management plans. The two departments most affected by this ordinance, the Port and Recreation and Parks, gave updates on their progress in implementing management plans. This report provides an updated summary of the activities of these Departments in implementing the ordinance.

IMPLEMENTATION PROGRESS:

I. Environmentally Preferable Alternatives

As directed by the ordinance SF Environment developed an approved list of alternatives to wood preservatives containing arsenic, including the most commonly used arsenic-based wood preservative, chromated cooper arsenate (CCA).

The methodology used to develop this approved list of alternatives follows the City's adoption of the Precautionary Principle as a means of making informed decisions regarding health and the environment. Both this list of alternatives and the accompanying report ("Guidelines for Selecting Wood Preservatives") are included in their entirety as Appendix A.

II. Purchase of Alternatives

The Office of Contract Administration (OCA) is responsible for administering the procurement of goods and services on behalf of the City and County of San Francisco.

Present contracts for lumber and plywood last went out to bid in October 1998 for a two-year term, ending in September 2000. In the original bids for lumber and plywood, CCA-treated wood was one of the items to be bid. The City did not receive any bids on CCA-treated wood at that time, and no bids were awarded on those items. The contracts have been month-to-month, since September 2000.

Of the three vendors who provide lumber and plywood to the City under these existing contracts, Van Arsdale-Harris Lumber Company and Plywood & Lumber Sales do not sell any preservative treated wood to the City or to any of their other customers. The third vendor, Beronio Lumber, has not sold any preservative treated wood containing CCA to any customers for the past 5-6 years.

Further, all contracts and grants awarded by the city now include boilerplate language prohibiting the purchase of arsenic treated wood.

> **47. Preservative-treated Wood Containing Arsenic**
>
> **As of July 1, 2003, Contractor may not purchase preservative-treated wood products containing arsenic in the performance of this Agreement unless an exemption from the requirements of Chapter 13 of the San Francisco Environment Code is obtained from the Department of the Environment under Section 1304 of the Code. The term "preservative-treated wood containing arsenic" shall mean wood treated with a preservative that contains arsenic, elemental arsenic, or an arsenic copper combination, including, but not limited to, chromated copper arsenate preservative, ammoniacal copper zinc arsenate preservative, or ammoniacal copper arsenate preservative. Contractor may purchase preservative-treated wood products on the list of environmentally preferable alternatives prepared and adopted by the Department of the Environment. This provision does not preclude Contractor from purchasing preservative-treated wood containing arsenic for saltwater immersion. The term "saltwater immersion" shall mean a pressure-treated wood that is used for construction purposes or facilities that are partially or totally immersed in saltwater.**

Email communication from Senior Purchaser Jeannie Louie (OCA) substantiating this information can be found in Appendix B at the end of this report.

III. San Francisco Recreation and Parks Department Management Program: Replacing Existing Structures

A. Play Structures

The San Francisco Recreation and Parks Department (SFRP) maintains parks, provides recreation activities, and preserves the environment for the well-being of the community. Per ordinance requirements, SFRP successfully completed an inventory of all wooden play structures located on City property in October 2003. Of 92 play structures tested, 34 were found to be constructed of wood containing arsenic-based wood preservatives. Since the completion of the inventory, 2 of the 34 were removed, and 5 of the 34 have been replaced, with 27 remaining. Capital Improvements Plans identify 12 more structures to be replaced in the next several years. Replacement of the remaining 15 has not yet been planned and is contingent on funding. Estimated average costs for replacing play structures is approximately $750,000 per structure. Test results and locations of play structures can be found in Appendix D of the SFRP Pressure Treated Lumber Management Plan.

SFRP also completed a written pressure-treated management program in July 2003, and revised it at the end of 2004 to include a summary of annual progress and goals for the subsequent fiscal year. The Arsenic Guidance Document, an appendix to this report, explains the scientific protocols for the testing phase. Other appendices contain information regarding testing, sealing schedules, and public notification. The public notification program involves placing signs at play structures known to contain arsenic – while draft language for these signs has been developed the posting of these signs is not yet underway. Draft notification language is included in Appendix D.

B. Park Benches and Picnic Tables

SFRP also tested park benches and picnic tables, two other possible locations where human contact is generally high. SCA Environmental (testing consultant) performed X-ray fluorescence (XRF) tests at 23 different park sites on a total of 136 benches. All tested negative for arsenic. SCA also conducted similar tests at 7 park sites on a total of 29 picnic tables. Again all tested negative for arsenic.

The summary "Update on SFRP Pressure Treated Lumber Management Program" can be found at the end of this report as Appendix C, followed by the report "Pressure Treated Lumber Management Plan," in Appendix D

IV. Port of San Francisco

The Port of San Francisco has reported on the inspection of wood decking, handrails, benches and other wood structures on Port property. Inspection was done on the basis of known or suspected existence of treated wood, but actual testing was not indicated in the report. Of 39 sites inspected, 8 were in the category of high probability of human contact and are given the highest priority for sealing or replacement. Sealing of these Port structures is currently underway, but no timetable was given for progress of completion. A list of the sites and priorities along with photos is included in Appendix E.

V. Disposal at Approved Landfills

The Capital Division's demolition activities are overseen by the Department of Public Works, Bureau of Construction Management's Site Assessment and Remediation Division (SAR). All wood waste containing arsenic is disposed of at an approved hazardous material landfill.

VI. Possible Citywide Ban

A Citywide ban is now unnecessary due to a voluntary US EPA Ban on CCA-treated wood. CCA-treated wood is generally no longer commercially available except for certain specific applications (e.g. marine uses).

VII. Sealants

In 2004 the Department engaged the services of Washington Toxics Coalition staff scientists to conduct a study to identify the most effective sealants that can be applied to arsenic-treated wood. In addition, the study seeks to determine the most effective application methods and how often the products need to be reapplied.

Key findings from this report include the following:

1. Clear sealers, water repellents, and varnishes do not appear to provide much durability, and should generally be avoided as single-treatment finishes.
2. Acrylic, latex paint should be considered for fences, tables, and other furniture that receive moderate to low wear or are vertically oriented. They may also be appropriate for hand rails. Inspection should look for evidence of blistering, peeling, or cracking.
3. Semi-transparent deck stains should be used for deck surfaces and play structures.
4. All coated items should receive inspections at a six-month interval to assess the need for retreatment. Horizontal surfaces can be expected to need retreatment most frequently, tilted surfaces next, and vertical surfaces least frequently.
5. If possible, wipe testing should be done when items are inspected to provide additional basis for decision-making.
6. *Consumer Reports* studies appear to be the only ones that can give guidance on specific products within the recommended categories. These ratings should be used to identify the most promising products, and if desired the City's wipe testing could be used to compare the performance of the best candidate products.
7. Surfaces should not be sanded or pressure washed before coating. Surface preparation should focus on cleaning, rinsing, and drying. Avoid acid-based or highly oxidizing cleaners or deck brighteners.
8. Surfaces should be clean, dry, and free of mildew. Lumber that has been very wet should be allowed to air dry for two to three weeks in dry weather before coating. Avoid finishing when rain is expected within 24 hours. If water-based products are used, do not apply if temperature will drop below 50 degrees during the 24 hours following application. Do not over-apply product; follow label directions.
9. To avoid dispersing arsenic contamination, minimize brush applications, work from small containers, and use up excess rather than pouring back into original can. Brushes and rollers used for arsenic protection should not be used for other purposes.

Appendix A.

1) Alternatives List for Arsenic-Treated Wood
2) Guidelines for Selecting Wood Preservatives

Appendix B. Email correspondence from Office of Contract Administration (2)
Appendix C. Update on SFRP Pressure Treated Lumber Management Program
Appendix D. Pressure Treated Lumber Management Plan
Appendix E. Port of San Francisco cover letter with site list and photos

Attachment A

Alternatives List for Arsenic-Treated Wood
Acceptable Materials by Use
Adopted September 10, 2003

(List will be updated periodically to allow for the inclusion of new materials.)

Results of Criteria Screening

Treatment	Result
CuN	Acceptable for some uses. See table below.
Cu8	Not acceptable.
Creosote	Not acceptable.
PCP	Not acceptable.
ACA	Not acceptable. Exception for salt water immersion.
ACC	Not acceptable.
ACQ	Acceptable for some uses. See table below.
ACZA	Not acceptable. Exception for salt water immersion.
CA-B	Acceptable for some uses. See table below.
CBA	Acceptable for some uses. See table below.
CCA	Not acceptable. Exception for salt water immersion.
CC	Acceptable for some uses. See table below.
DOT, borates	Acceptable for some uses. See table below.
CDDC	Not acceptable.
ZnN	Acceptable for some uses. See table below

The treatments that passed the screening criteria for at least some uses were then cross-checked with the AWPA standards. Those for which standards exist are listed in the table below as acceptable materials.

Summary of Acceptable Materials by Use

(List will be updated periodically to allow for the inclusion of new materials.)

DESCRIPTION OF USE	*UCS (AWPA Use Classifications)*	*C (AWPA Standard)*	*Acceptable Materials (must also be allowed by building code for specific intended use)*
BEAMS & TIMBERS (GLUE LAM.)			
Dry environment, above ground	1,2	C28	CuN[1]
Damp environment, above ground	3B	C28	CuN[1]
Ground contact	4A	C28	CuN[1]
Highway construction	4B, 4C	C14	ACQ[2,3]
BUILDING CONSTRUCTION MATERIAL			
Floor plate	2, 3B	C2, 15, 31	ACQ[3], CA-B, CBA, CC, DOT or other borates
Flooring, residential			
Damp environment	3B	C2	ACQ[3], CA-B, CBA, CC
Dry environment	1, 2	C2, 31	DOT or other borates
Framing, interior	1, 2	C2, 15, 31	DOT or other borates

Joists			
Interior, above ground	1, 2	C2, 15, 31	DOT or other borates
Exterior, above ground	3B	C2, 15	ACQ[3], CA-B, CBA, CC
Soil contact	4A	C2, 15	ACQ[3], CA-B, CBA
Lumber			
Above ground	3B	C2	CuN[1], ACQ[3], CA-B, CBA, ZnN[1]
Ground contact	4A	C2	CuN[1], ACQ[3], CA-B, CBA
Tree stakes	4A	C2	CuN, ACQ[3], CA-B, CBA
Fresh water use	4A	C2	Plastic-coated lumber[4], CuN, ACQ[3]
No ground contact, protected from liquid water	2	C31	DOT or other borates
Permanent wood foundation (lumber or plywood)	4B	C22	None
Plywood			
Sub-floor, damp above ground	2	C9	ACQ[3], CA-B, CBA, CC
Exterior, above ground	3B	C9	ACQ[3], CA-B, CBA, CC
Ground contact	4A	C9	ACQ[3], CA-B, CBA, CC
Fresh water use	4A	C9	None
No ground contact, protected from liquid water	2	C31	DOT or other borates
Poles, building			
Round	4A, 4B	C4, 16	ACQ
Sawn	4A, 4B	C2, 16	CuN[1], ACQ[3], CA-B, CBA, CC, DOT or other borates
Studs	3B	C2, 15	DOT or other borates
DECKING			
Highway bridge	4B	C2, 14	CuN, ACQ[3]
Above ground			
Not over or near water	3B	C2, 15	CuN, ACQ[3], CA-B, CBA,
Over or near water	3B	C2, 15	Plastic-coated wood[4], CuN, ACQ, ZnN
Ground contact	4B	C2, 15	CuN, ACQ[3], CA-B, CBA
FENCES			
Pickets, slats, trim	3A, 3B	C2, 15	CuN, ACQ[3], CA-B, CBA
Posts, sawn	4A	C2, 15	ACC, ACQ[3], CA-B
Posts, round	4A	C5	CuN, ACQ[3], CA-B, CC
HIGHWAY MATERIAL			
Lumber and timbers for bridges, structural members, cribbing, and culverts	4B	C2, 14	CuN, ACQ[3]
Structural lumber and timbers			
In salt water use	5A, 5B, 5C	C3, C14	See note 5
Piles, foundation, land use	4C	C3, 14	No acceptable non-arsenic materials available
Piles, foundation, fresh water use	4C	C3, 14	No acceptable non-arsenic materials available
Piling in salt water use	5A, 5B, 5C	C3, 14	See note 5
Posts: round, half-round, quarter round	4A	C5, 14	CuN, ACQ[3]
Posts: sawn	4A	C2, 14	CuN, ACQ[3], CA-B, CBA

Handrails and guardrails	3B	C2, 14	CuN, ACQ[3], CA-B, CBA
Posts, guardrail			
Round	4A	C2, 14	CuN, ACQ[3]
Sawn	4A	C2, 14	CuN, ACQ[3], CA-B, CBA
MARINE LUMBER & TIMBERS			
Fresh water	4A	C2	Plastic-coated wood[4], CuN, ACQ[3], CA-B
Brackish water or salt water	5A, 5B, 5C	C2, 18	Plastic-coated wood[4]
PILES			
Foundation (round)	4C	C3	No acceptable non-arsenic materials available
Land use (round)	4C	C3	CuN
Fresh water use (round)	4C	C3	Plastic-coated piles, CuN
Marine (round) in salt or brackish water	5A, 5B, 5C	C3, 18	See note 5
Marine, dual treatment (round)	5A, 5B, 5C	C3, 18	See note 5
Sawn timber piles	4B	C24	See note 5
UTILITY POLES			
Sited in soil	4A, 4B	C4	CuN, ACQ[3]
Sited in impervious surface	4A, 4B	C4	CuN (butt-treatment preferred)

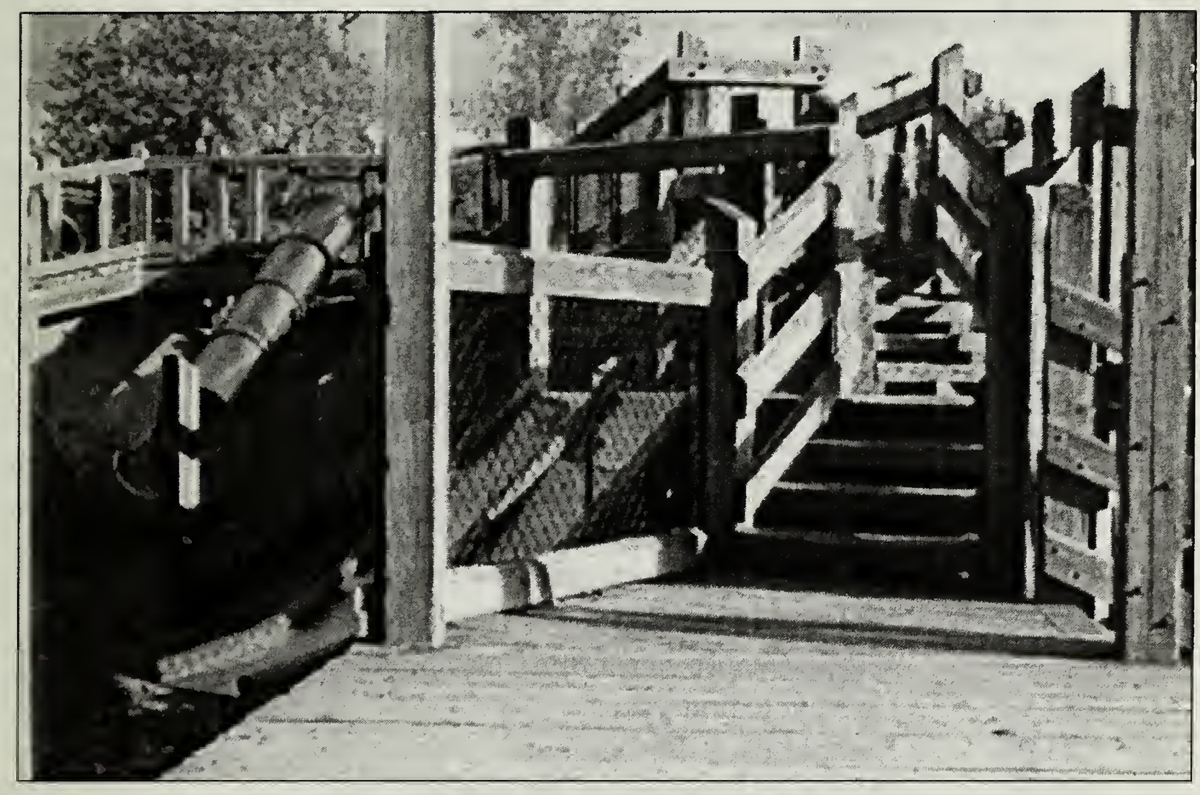
Notes:

1. CuN and ZnN allowed for indoor use only as pressure-treated wood. Other applications are not registered for indoor use.
2. Only standardized if treated before lamination.
3. Select either ACQ-B or ACQ-D as appropriate based on AWPA standards.
4. Non-PVC plastic only. Lumber should not be treated with arsenic.
5. Non-wood materials are preferred. When pressure treated wood is required, an exemption exists for saltwater immersion environments for structures such as pilings and piers until a viable alternative is available.

List of Abbreviations

AAC	Alkyl ammonium compound
ACA	Ammoniacal copper arsenate
ACC	Acid copper chromate
ACQ	Ammoniacal (or amine) copper quat (see below) ACQ-B: Ammoniacal copper quat ACQ-D: Amine copper quat
ACZA	Ammoniacal copper zinc arsenate
AWPA	American Wood Preservers' Association
CA-B	Copper azole
CBA	Copper boron azole
CC	Copper citrate (or ammoniacal copper citrate)
CCA	Chromated copper arsenate
CDDC	Copper bis(dimethyldithiocarbamate)
CuN	Copper naphthenate
Cu8	Copper-8-quinolinolate
DOT	Disodium octaborate tetrahydrate
PCP	Pentachlorophenol
ZnN	Zinc naphthenate

Guidelines for Selecting Wood Preservatives



Philip Dickey
Staff Scientist
Washington Toxics Coalition

For
The San Francisco Department of the Environment

Draft: August 4, 2003

List of Abbreviations and Acronyms

AAC	Alkyl ammonium compound
ACA	Ammoniacal copper arsenate
ACC	Acid copper chromate
ACGIH	American Conference of Governmental Industrial Hygienists
ACQ	Ammoniacal copper quat
ACZA	Ammoniacal copper zinc arsenate
AWPA	American Wood Preservers' Association
BaP	Benzo[a]pyrene
CBA	Copper azole
CC	Copper citrate (or ammoniacal copper citrate)
CCA	Chromated copper arsenate
CDDC	Copper bis(dimethyldithiocarbamate)
CuN	Copper naphthenate
Cu8	Copper-8-quinolinolate
IARC	International Agency for Research on Cancer
IPBC	3-iodo-2-propynyl butyl carbamate
LCA	Life cycle analysis
LD50	Lethal dose fifty percent
NTP	National Toxicology Program
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic aromatic hydrocarbon
PCF	Pounds per cubic foot
PCP	Pentachlorophenol
PEL	Permissible exposure limit
RfD	Reference dose
TCDD	Tetrochlorodibenzodioxin
TEQ	Toxic equivalence
ZnN	Zinc naphthenate

Guidelines for Selecting Wood Preservatives

Philip Dickey, Staff Scientist, Washington Toxics Coalition

Introduction

Wood has been the material of choice for many applications such as building construction, decking, outdoor furniture, playground equipment, bulkheads, piers, pilings, utility poles, and other uses. Despite its obvious advantages, including strength, appearance, ease of fabrication, availability, renewability, and cost, in certain situations, particularly outdoors, wood is subject to attack by fungi, insects, and marine organisms. A wide range of wood preservative treatments have been developed to protect wood and prolong its useful life. The U.S. EPA estimates that nearly 700 million pounds of wood preservatives are used annually in the United States (USEPA 1999a).

Most wood preservatives contain toxic or otherwise hazardous chemicals that can cause adverse impacts to human health or to the environment. For example, chemicals applied via "pressure treatment" penetrate some distance into the wood and may be fixed in place by chemical reactions or other mechanisms. Although this fixation process reduces the amount of chemicals that can be rubbed off or leached from the wood, it does not entirely prevent either of these losses from occurring. There is now a considerable body of scientific literature documenting the dislodging of surface residues and the leaching of preservative chemicals from treated wood of various types during its useful life. In addition, preservative chemicals can be released into the environment during processing and storage of treated wood, during sawing or other fabrication, and during or after disposal. The adverse environmental impacts from treated wood can be reduced by selecting the most appropriate material for the application (which may not be treated wood at all), mitigating impacts on site, and by proper disposal of construction materials and ultimately the structure itself.

The San Francisco Department of the Environment contracted with the Washington Toxics Coalition to investigate factors or criteria that might be used to select preferred wood preservative treatments or alternative construction materials for city projects. This project is a follow-up to a previous assessment of the City's pesticide use in 1999 (Dickey 1999). This document is aimed at providing guidance for selecting the materials that are least likely to cause harm. It should be understood at the outset that this study is neither a risk assessment nor a life-cycle analysis. In a typical risk assessment, the probability or likelihood of harm is estimated by considering the hazards posed by the chemicals, the expected human or environmental exposure levels, and the susceptibility or sensitivity of the organisms under consideration. Although evaluating exposure levels can yield useful information, risk assessment is often limited by insufficient toxicology data on the individual chemicals, incomplete knowledge of likely exposure conditions, and no consideration of the effects of simultaneous exposures to mixtures of chemicals. These uncertainties and data gaps limit the ability of a risk assessment to guarantee that a particular chemical or product is safe in the absolute sense. Many risk assessments have already been performed on the chemicals that will be discussed here. Even when the scope of risk assessments is narrowed to a single preservative treatment and a single exposure pathway, the results can vary by orders of magnitude, leading to contradictory interpretations. A life-cycle analysis (LCA) catalogues and evaluates environmental impacts during all aspects of a product's life, from extraction of raw materials to disposal and beyond. LCAs are expensive and sometimes difficult to interpret when impacts of different products or processes are qualitatively very different. An LCA is far beyond the scope of this project.

This analysis will take a different approach, which could be called an alternatives hazard assessment. Information was collected on a number of parameters for each chemical. The data include toxicity values, presence of carcinogens and other ingredients of concern, relative leaching rates, and regulatory standards. These data were then combined with information on the existing industry standards, EPA recommendations or restrictions, and California restrictions. Using criteria developed in cooperation with the Department of the Environment, an acceptable list of wood preservatives was identified for each proposed use.

Profiles of Wood Treatments

Wood preservatives can generally be categorized in two ways: pressure-treated versus surface applied and oil-borne versus water-borne. A few chemicals can be applied via either method or via either carrier, but these are relatively rare. Table 1 lists the known ingredients in all of the wood preservatives considered here. For the pressure-treated materials, the source of information is the American Wood Preservers' Association Book of Standards (AWPA 2001). For surface-applied preservatives, information was taken from material safety data sheets and product labels for representative products.

Table 1. Typical Constituents of Wood Preservatives

Preservative Name	Constituents	Percent		
Creosote	coal tar or distillate	50%		
	petroleum oil	50%		
Pentachlorophenol (PCP)	pentachlorophenol	>95%		
Acid Copper Chromate (ACC)	copper as CuO	31.80%		
	hexavalent chromium, as CrO_3	68.20%		
Ammoniacal Copper Arsenate (ACA)	copper, as CuO	49.80%		
	arsenic, as As_2O_5	50.20%		
Ammoniacal Copper Zinc Arsenate (ACZA)	copper, as CuO	50%		
	zinc, as ZnO	25%		
	arsenic, as As_2O_5	25%		
Borates	sodium octaborate, sodium tetraborate, sodium pentaborate, or boric acid			
Chromated Copper Arsenate (CCA)		CCA-A	CCA-B	CCA-C
	hexavalent chromium, as CrO_3	65.50%	35.30%	47.50%
	copper, as CuO	18.10%	19.60%	18.50%
	arsenic, as As_2O_5	16.40%	45.10%	34.00%

Preservative Name	Constituents	Percent		
Alkyl Ammonium Compound (AAC, DDAC)	didecyldimethylammonium chlorides	90% min		
	dialkyldimethylammonium chloride	10% max		
Ammoniacal Copper Quat (ACQ)		ACQ-B	ACQ-D	
	copper, as CuO	66.70%	66.70%	
	didecyldimethylammonium chlorides	33.30%	33.30%	
Ammoniacal Copper Citrate (CC)	copper, as CuO	62.30%		
	citric acid	37.70%		
Copper Azole (CBA-A)	copper, as CuO	49%		
	boron, as boric acid (H_3BO_3)	49%		
	tebuconazole	2%		
Copper bis(dimethyldithiocarbamate) (CDDC)	copper, as CuO SDDC	17-29%[1] 71-83%		
	sodium dimethyldithiocarbamate			
Copper Naphthenate (CuN)	copper	6-8% concentrate	0.5-2% treating solution	
	naphthenic acid			
	petroleum oil			
Copper-8-Quinolinolate (Cu8)	copper-8-quinolinolate	10% min		
	nickel-2-ethylhexoate	10% min		
	hydrocarbon solvents	80% max		
4,5-dichloro-2-n-octyl-4-isothiazolin--3-one	4,5-dichloro-2-n-octyl-4-isothiazolin--3-one	98%		
	related non-volatile impurities	<2%		
	hydrocarbon solvents			
3-iodo-2-propynyl butyl carbamate (IPBC)	IPBC	97%		
	iodine as element	53.40%		
Zinc Naphthenate (ZnN)	zinc	1.8-8%		
	naphthenic acid			
	petroleum oil			
Note:				
1 Sequential treatment resulting in SDDC:Copper ratio of 2.5 to 5				

Table 2 shows how the preservatives considered are classified as to treatment method and type of solvent.

Table 2. Categorization of Wood Preservatives

Pressure-Treated			Surface Applied	
Oil-borne	Water-borne		Oil-borne	Water-borne
Creosote	AAC	CDDC	CuN	borates
Pentachlorophenol	ACC	CBA	ZnN	
CuN	ACA	borates	IPBC	
Cu8	ACZA			
AAC	ACQ			
IPBC	CCA			
	CC			

The regulatory and political situation related to wood preservatives is highly volatile at the present time. Amidst a rising tide of concern about the arsenical preservatives, especially CCA, and while in the process of conducting a new risk assessment for the material, EPA announced on February 12, 2002 a "voluntary decision by industry to move consumer use of treated lumber products away from a variety of pressure-treated wood that contains arsenic by December 31, 2003, in favor of new alternative wood preservatives." (USEPA 2002) This decision affects virtually all (but only) residential uses of wood treated with CCA, including wood used in play-structures, decks, picnic tables, landscaping timbers, residential fencing, patios and walkways/boardwalks. The decision may gradually affect non-residential uses as well through increased availability of alternative products. PCP and creosote are also being reviewed by EPA. Beyond Pesticides, formerly the National Coalition Against the Misuse of Pesticides, and several other groups are pursuing legal action against EPA to stop all uses of penta, creosote, and CCA (Feldman 2002). Decisions may occur at any time that would alter the allowed uses for these materials. Given this background, the available preservative treatments could change rather rapidly from those listed in this report.

Human Health Concerns

Toxicity

Table 3 lists acute and chronic toxicity values for the major ingredients in wood preservatives. For all three measures described below, lower values indicate higher toxicity.

- The LD50 (lethal dose fifty percent) is the lethal dose by oral exposure, a measure of short-term toxicity, usually determined in rodents.
- The chronic reference dose (RfD) is the supposedly safe daily dose (for non-carcinogenic effects) by oral ingestion.
- The Permissible Exposure Limit (PEL) is the maximum safe air concentration in occupational settings, averaged over a 40 hour week, an indicator of inhalation toxicity. Numbers quoted represent the range spanned by standards from NIOSH, OSHA and/or ACGIH.

By all three measures, arsenic is by far the most toxic of the preservative components from a human health standpoint. It should be noted that copper, zinc, and chromium III are all essential human nutrients in appropriate amounts. (For metal-based preservatives, toxicity data are given for individual metals rather than for the mixture present in the treating solution because human and environmental exposure to the components will not necessarily occur in proportion to their presence in the treating solution or in the wood.)

Many of the preservative components are carcinogenic, also indicated in the table. Pentachlorophenol is considered a probable human carcinogen by EPA (USEPA 2001), a possible human carcinogen by IARC (IARC 2001), and is listed as carcinogenic by the State of California (California 1999). The toxicology of PCP poses particular challenges because the compound is routinely contaminated with a host of other highly toxic compounds, including hexachlorobenzene (HCB), polychlorinated dibenzo dioxins (CDD) and polychlorinated dibenzofurans (CDF). These contaminants may be

Table 3. Toxicity Information for Major Wood Preservative Constituents

	LD50[1]	RfD[2]	PEL[3]	Carcinogenicity					Rep/Dev
Substance	(mg/kg)	(mg/kg/d)	(mg/m3)	EPA	NTP	IARC	CA	ACGIH	CA
PCP	146-210	.03 .0045[4]	0.5 (skin)	B2	--	2B	L	A3	--
HCB	3500-4000	.0008	.025	B2	R	2B	L	A3	L
PCDD	--	--	--	likely	--	--	L	--	--
PCDF	--	--	--	likely	--	--	L	--	--
TCDD*	0.045-0.114	†		A[4]	K	1	L	--	L
Creosote	525-885	--	0.1-.2	B1	K	2A	L	A1[#]	
Arsenic	15-175[7]	.0003	0.002-.01	A**	K**	1**	L**	A1**	L**
Copper	300 (sulfate)	--	1.0 (dust)	D	--		--	--	--
Chromium (VI)	25[7]	.003	0.001-.1	A (in) D (or)	K	1	L	A1	--
Chromium (III)	183-200; 2365[7]	1.5	0.5		--	3	--	A4	--
Nickel (Cu8 Quin)			.015-1	--	R	1[##]	L	--	--
Zinc	7950 (oxide)	.3	10 (dust)	D	--	--	--	--	--
Cu naphthenate	>5000	--	--	--	--	--	--	--	--
Zn naphthenate	4920	--	--	--	--	--	--	--	--
Naphthenic acids	6420-7170	--	--	--	--	--	--	--	--
Chlorothalonil	>5000	.015	--	likely	--	2B	L	--	--
DDAC	84-360[6]	--	--	--	--	--	--	--	--
Borates/boric acid	466-900 B	--	1-5	E	--	--	--	--	--
IPBC	1470	--	--	not likely		--	--	--	--
Propiconazole	1517 (rat)	--	--	C	--	--	--	--	--
Tebuconazole	3933->5000[5]	--	--	C	--	--	--	--	--
SDDC	--	--	--	--	--	--	--	--	L

Key:
-- = no data found
Rep/Dev=reproductive or developmental toxicant

Carcinogenicity categories:
EPA (A=human; B=probable human; C=possible human, D=not classifiable; E=evidence noncarcinogenic).
NTP (K=known human; R=reasonably anticipated human)
IARC (1=human; 2A=probable human; 2B=possible human; 3=not classifiable; 4=probably noncarcinogenic)
CA (L=listed as a carcinogen)
ACGIH (A1=confirmed human; A2=suspected human; A3=animal carc.; A4=not classifiable; A5=not suspected)

References:
1 HSDB; 2 IRIS; 3 NIOSH, OSHA or ACGIH; 4 USEPA 1999b; 5 USEPA 1997a; 6 Henderson 1991; 7 USEPA 2001

Other notes:
* 2,3,7,8-TCDD is not detected as a contaminant in PCP currently manufactured in the US, but it is found in older PCP, including treatments of wood still in service. However, other dioxin-like compounds such as PCDD and PCDF are expected to cause the same health effects, albeit at different doses.
** Inorganic arsenic compounds.
† EPA considers the RfD uninformative for risk management because on average the U.S. population is already exposed above this level.
# rating is for coal tar pitch volatiles, benzene soluble.
## Nickel compounds Group 1; Metallic nickel Group 3.

responsible for toxic effects seen in some studies. Some of these contaminants are in themselves carcinogens. The most toxic dioxin, 2,3,7,8-TCDD is not detected in current formulations of PCP at a detection limit of 1 ppb, but it is important to distinguish between a compound not being detected as opposed to not being present at all. Other dioxin-like compounds detected in PCP are expected to cause the same health effects as TCDD, though at higher doses. The Toxic Equivalence (TEQ) of the mixture can be used to relate the total toxicity to that of TCDD.

Creosote contains hundreds of distinct chemical compounds, including a large number of polycyclic aromatic hydrocarbons (PAHs) that are individually classified as carcinogens, and creosote itself is considered a known human carcinogen by the National Toxicology Program (NTP 2001) and the American Conference of Governmental Industrial Hygienists (ACGIH 2001). Creosote is also listed as a carcinogen by the State of California. Hexavalent chromium is listed as a known human carcinogen by EPA, NTP, IARC, ACGIH, and the State of California. Inorganic arsenic is also listed as a known human carcinogen by all of these same agencies. Chromium VI (present in the treating solution of ACA, CCA, and ACZA) is a known human carcinogen. However, during the fixing period, chromium VI is largely transformed into chromium III, which is much less toxic and not listed as a carcinogen. Tebuconazole and propiconazole (possible azole components of CBA) are listed as possible human carcinogens by EPA.

Several preservative components or contaminants are listed as reproductive or developmental toxicants by the state of California. These include SDDC, inorganic arsenic compounds, TCDD, and hexachlorobenzene.

Surprisingly little toxicology information is available for copper naphthenate or zinc naphthenate, despite the fact that these wood preservatives have been in use for many years. Although the acute oral toxicity of both is reported as low (~5000 mg/kg, see Table 3), similar to that of naphthenic acids, the composition of the naphthenic acids and petroleum solvents employed in formulations is variable. Naphthenic acids contain 5-25% impurities "whose composition is the same as the petroleum fraction from which the naphthenic acids are derived" (HSDB 2001). Solvents used to dilute copper naphthenate include fuel oils, mineral spirits, naphtha, and toluene (Grove 1987). In indoor uses, the solvents and impurities could be more relevant to toxic exposures than the pure preservative itself, and neither of these products is currently labeled for indoor use. The amount of copper and zinc present in the naphthenate wood preservatives (e.g. 6-8% Cu in concentrate, 0.5-2% Cu in treating solution (Grove 1987), 1.8-8% Zn) is far lower than in the water-borne treatments containing these metals (typically 15-50% Cu, 25% Zn).

This information suggests that arsenic presents the greatest non-carcinogenic human health hazard of all the preservative components for which data could be found. In addition, as will be seen later, arsenic also can present significant cancer risk. The National Academy of Sciences National Research Council has recently found greatly increased risks for a variety of cancers from arsenic levels in drinking water (NRC 2001), and EPA has reduced the drinking water standard fivefold from 50 to 10 micrograms per liter (EPA 2001). PCP, creosote, and hexavalent chromium also pose major health concerns for both cancer and other health effects. Significant health risks may also be associated with the microcontaminants found in PCP, although a full assessment of those risks is not yet complete. It is thought that teratogenic effects reported in some PCP studies are caused by the contaminants, since EPA does not consider PCP a teratogen, yet recognizes that the contaminant hexachlorodioxin is a teratogen (and hexachlorobenzene is considered a developmental toxicant by the state of California). Thus, EPA feels that the label warnings concerning teratogenicity on pentachlorophenol formulations are still justified (USEPA 1999c).

Routes of Exposure

The probability of toxic effects actually occurring from any chemical depends on the amount of human exposure that occurs.

Skin Contact

Exposure to wood preservative components through skin contact can occur if the treated structure is located in proximity to human activities. The highest contact by the general public is likely to occur for playground equipment, tables and benches, decks and deck railings. Somewhat lower contact would be expected with fences and utility poles, but indirect contact with the chemicals may still occur if the chemicals leach into the soil and that soil is readily accessible. Utility workers can also have significant skin contact with utility poles. Least accessible to human skin contact (except during construction) would be support posts and beams isolated from possible contact, structural wood framing and foundations, and pilings. Skin contact with wood preservatives can dislodge residues onto the hands, leading to ingestion exposure (see next paragraph). Some preservative chemicals can also be absorbed through the skin.

One goal of wood preservation selection criteria should be to minimize skin contact with the most toxic wood preservatives. This is particularly important for children, who are most sensitive to toxic chemicals generally (IPCS 1986, NRC 1993, Landrigan 1998, Muckerjee 1998) and whose behavior puts them at elevated risk because they may have additional contact with soils and flooring and are more likely than adults to engage in hand-to-mouth behaviors or ingesting soil (Calabrese 1991, Hawley 1985, Mahaffey 1985). Sealing of preserved wood with surface coatings can significantly reduce dislodgeable residues, but only as long as the coating remains intact (Stilwell 2001). On high-wear surfaces, frequent re-coating will be required. Sealing remains an option for structures already in place, but when selecting materials for construction the preference should be to avoid those materials that are most toxic.

Ingestion

Ingestion of wood preservative components is possible through the following mechanisms:
1. hand to mouth contact following skin contact with treated surfaces
2. hand to mouth contact following skin contact with contaminated soil
3. ingestion of contaminated soil
4. ingestion of food contaminated by contact with treated surfaces or soil

The likelihood of each scenario varies with the use and location of the treated wood. Wood preservative selection criteria should seek to minimize ingestion pathways, especially for the most toxic chemicals.

Inhalation

Inhalation exposures to wood preservative chemicals can occur in two main ways. During fabrication of structures, cutting, drilling, or other mechanical working of treated wood produces sawdust that may be inhaled. This sawdust contains the preservative chemicals, and its toxicity will depend on the type of treatment, retention level of treatment, and depth of penetration into the wood. Although good occupational safety practices would dictate wearing protective gear while working with treated wood, it should be a goal of the selection criteria to give preference to the wood preservatives with the least-toxic sawdust for those applications where considerable on-site fabrication will be necessary.

The second inhalation exposure scenario occurs through vaporization of preservative chemicals from the surface of the wood. The health risk will typically be greatest for indoor uses, but could be significant outdoors as well, especially in workplace settings where large quantities of treated wood may be encountered on a daily basis. Most of the water-borne preservatives are inorganic salts, for which volatilization is probably negligible. For organic compounds such as pentachlorophenol and creosote and for carrier oils, however, significant evaporation may take place. EPA has placed restrictions on the use of penta and creosote in interior construction (USEPA 1987a,b). Other oil-borne wood preservatives may not be good choices for indoor use or may not be registered for indoor uses. Health complaints and elevated urine and serum copper levels were reported in three individuals who lived in a home where copper naphthenate was sprayed on the inner foundation (Bluhm 1992). Both copper naphthenate and zinc naphthenate labels were revised to exclude indoor applications after the California Department of Pesticide Regulation and the EPA reviewed health complaints related to indoor use of the materials (CDPR 1999).

Estimates of Human Health Risk

In toxicology, the concept of risk integrates toxicity, exposure, and individual susceptibility into a probability of harm. While risk assessment (i.e. the estimation of risk) can suffer from serious shortcomings that were discussed in the introduction to this report, a number of recent assessments have raised concerns about some of the chemicals being considered here. In addition, some local jurisdictions have begun to implement restrictions that go beyond what EPA requires because they have determined that the risks of certain products are unacceptable.

Pentachlorophenol

Pentachlorophenol is currently registered in the United States as a restricted-use pesticide, and many previous uses have been cancelled. The EPA is currently evaluating pentachlorophenol for re-registration as a wood preservative. As part of that process, it has conducted comprehensive risk assessments for both human and environmental hazards. Although the assessment has not been finalized, the draft document identified some shockingly high estimated risks for some workers, especially those who apply penta grease to utility poles. Table 4 shows some of the highest cancer risks found by EPA.

Table 4. Estimated Cancer Risks from Pentachlorophenol (USEPA 1999c)

Exposure Scenario	Cancer Risk/million*	Notes
Utility pole installer	6600	dermal only
Applying PCP grease to poles	3,400,000	without gloves
	420,000	with gloves
Child contact with soil contaminated by PCP from utility pole	1.2	minimum
	220	maximum

*These risks do **not** include contributions from carcinogenic microcontaminants in PCP.

The highest risks were found for occupational exposures, where estimates for 13 of 14 handler scenarios exceeded EPA's level of concern (risk>100/million, using maximum protective measures). Additional high risks were found for some other postapplication scenarios in commercial and industrial settings. In addition, non-cancer risk estimates exceeded agency levels of concern for many handler and postapplication scenarios. The risk for workers applying grease formulations to utility poles is particularly striking in that it indicates virtual certainty of cancer over a 40-year exposure period. Given that these estimates do not include the contributions from carcinogenic contaminants in most PCP formulations, they may well be underestimates.

Creosote

Creosote is also registered as a restricted-use pesticide. Although the composition of creosote mixtures varies, about 75% of creosote consists generally of a large number of PAH compounds of varying toxicity, including a group of potentially carcinogenic heavy molecular weight compounds. One of the most toxic is benzo[a]pyrene (BaP). The variability and complexity of creosote composition make toxicity and risk assessments difficult. Creosote was responsible for "the first identified chemical-caused occupational cancer, as described in 1775 by the surgeon Sir Percival Pott that chimney sweeps developed scrotal cancer as a direct consequence of exposure to a defined 'substance' (soots) in that occupation." (Huff 2001) Karlehagen et al. found increased risk of skin cancer among a group of creosote-exposed workers in Sweden and Norway. (Karlehagen 1992)

The National Toxicology Program's Ninth Report on Carcinogens summarizes the epidemiological data on creosote and human cancer.

> *"There have been a number of case reports of skin cancer in patients who used tar ointments for a variety of skin diseases. A mortality analysis in the United Kingdom from 1946 showed a greatly increased scrotal cancer risk for patent-fuel workers. Furthermore, a large number of case reports describe the development of skin (including the scrotum)cancer in workers exposed to coal tars or coal-tar pitches. Several epidemiological studies have shown an excess of lung cancer among workers exposed to coal tar fumes in coal gasification and coke production. A cohort study of U.S. roofers indicated an increased risk for cancer of the lung and suggested increased risks for cancers of the oral cavity, larynx, esophagus, stomach, skin, and bladder and for leukemia. Some support for excess risks of lung, laryngeal, and oral cavity cancer is provided by other studies of roofers. Several epidemiological studies have shown excesses of lung and urinary bladder cancer among workers exposed to pitch fumes in aluminum*

> *production plants. A slight excess of lung cancer was found among furnace and maintenance workers exposed to coal tar pitch fumes in a calcium carbide production plan. One study showed a small excess of bladder cancer in tar distillers and in patent-fuel workers. An elevated risk of cancer of the renal pelvis was seen in workers exposed to "petroleum or tar or pitch." One study of millwrights and welders exposed to coal tars and coal tar pitch in a stamping plant showed significant excesses of leukemia and of cancers of the lung and digestive organs.*
>
> *In a number of case reports, the development of skin cancer in workers exposed to creosotes is described. One study involved a review of 3,753 cases of cutaneous epithelioma and showed that 35 cases (12 of which were of the scrotum)involved exposure to creosotes. Most cases occurred in workers handling creosotes or creosoted wood during timber treatment. A mortality analysis of workers in many occupations indicated an increased risk of scrotal cancer for creosote-exposed brickmakers."*

In 1999, a scientific committee of the European Union evaluated the cancer risk for children exposed to wood treated with creosote containing 50 ppm or less BaP. This report served as the basis for restrictions on the use of creosote in Europe beginning in mid 2003, after which time creosote and creosote-treated wood cannot be sold to consumers (EC 2001). The amount of BaP in creosote serves as a marker for the classification of creosote in Europe. However, a rodent skin-painting study cited by the committee found a fivefold higher risk of cancer than could be accounted for by BaP alone, presumably due to the presence of other carcinogenic substances in creosote. The committee estimated a risk on the order of 100 per million and concluded that "such a risk level gives clear reason for concern." (CTSEE 1999) Many creosote mixtures contain much more than 50 ppm BaP and hence may present higher cancer risk. Brooks cites a typical BaP content of 0.2% or 2000 ppm (Brooks 1995). Bos et al. measured BaP at 0.18% in a creosote solution (Bos 1984).

Arsenicals

Most of the interest in arsenicals has focused on CCA because it is by far the most widely used, but to the extent that the concerns raised center on arsenic, they apply to all arsenical wood preservatives, some of which contain more arsenic than CCA.

In 1987, the California Department of Health Services (CADHS) issued a report to the state legislature on wood preservatives used on playground equipment (CADHS 1987). This report attributed the highest health risk to arsenic and estimated a skin cancer risk of between 100 and 6000 per million for lifetime exposure to arsenic at playgrounds. CADHS recommended that all treated-wood playground structures (except for wood treated with boric acid) be coated with a sealant every two years to minimize exposure. They also recommended that creosote and PCP not be used for playground or recreational equipment where children could be exposed.

Using different measurement techniques and assumptions, the Consumer Product Safety Commission in 1990 (CPSC 1990) estimated much lower cancer risks, from less than one in a million for wood with no detectable surface arsenic, to 3-4 per million for samples with detectable surface concentrations.

More recent evaluations by the Maine Department of Human Services (MEDHS 1998) and the University of Florida (Roberts and Ochoa 2001) estimated risks more in line with the earlier California DHS report. Roberts and Ochoa criticized a number of assumptions used by CPSC in 1990, including the cancer slope factor and the number of days per year of exposure.

The wood preservation industry has steadfastly maintained that CCA is safe and has recently issued its own risk assessment (Gradient 2001). Cancer risks calculated in this study are generally less than 10 per million, and in some cases go as low as 1.7.

It is not our intention to critique the various risk assessments. Experts disagree about many details of these calculations, including the amount of dislodgeable surface residues, children's behavior patterns, cancer slope factors, bioavailability, and other parameters. The U.S. EPA had undertaken a comprehensive review of CCA risk, but they announced the voluntary agreement to end residential uses before the review was completed. Although EPA stated that they had not concluded there was unreasonable risk to the public from CCA products, they did say that "phase-out of these uses will reduce the potential exposure risk to arsenic, a known human carcinogen, thereby protecting human health, especially children's health and the environment."

Public sentiment was turning against arsenic as a wood treatment before the voluntary ban was announced. The public interest groups Healthy Building Network and Environmental Working Groups had petitioned the CPSC to ban arsenic-treated wood in playground equipment and to review its safety for other uses (EWB/HBN 2001). The Center for Environmental Health in California has filed suit against manufacturers of CCA-treated play equipment, park benches, and picnic tables under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (H&S Code 25249.5 et seq.) also known as "Proposition 65" and the Business & Professions Code 17204 and 17535 (Cappel 2001). Beyond Pesticides and several other groups have petitioned EPA to cancel the registration of CCA (Beyond Pesticides 2001). Local governments are also beginning to take steps. For example, Alachua County, Florida recently recommended that CCA wood no longer be purchased by the county, and that some structures be removed and contaminated soil underneath be removed (Alachua 2001). The San Francisco Board of Supervisors voted to ban the use of arsenic-treated wood in all city construction projects (SFBC 2001). Then, on February 12, 2002 the EPA announced the voluntary agreement by CCA registrants to phase out use of the material for home uses by the end of 2003 (USEPA 2002).

Environmental Concerns

Leaching

Leaching refers to the loss of preservative chemicals from treated wood, usually as a result of contact with water. Leaching is of concern because chemicals that leave the wood can accumulate on the ground under or around treated structures, resulting in possible additional human exposures through contact with contaminated soil. Leaching can also cause preservatives to enter surface waters, particularly if the structures are located in or over the water, but also, to a lesser extent, if contaminated runoff from the structure can reach a water body either directly or via a storm sewer.

It is well established that preservative chemicals do leach from treated wood, despite the fact that one often hears that CCA and similar preservatives applied via pressure treatment are "fixed" to the wood and therefore don't leach to any appreciable degree. Lebow points out that the meaning of "fixation" must be approached with some care (Lebow, 1993):

> *"However, this definition must be qualified, because even fully-fixed CCA will leach to some degree, depending on the exposure conditions. Therefore, fixation might be more appropriately defined as the process that minimizes the leaching of preservative components, or according to Cooper and others (1993) in reference to CCA: 'the state of the chemical components of the preservative and wood or other substrate when all chemical reactions are complete.'"*

Whether or not leaching presents a problem in a given situation depends on many factors, including the extent of leaching, toxicity of the chemicals themselves, mobility and fate of chemicals in the environment, background levels of these and other chemicals in the environment, etc. The point of this analysis is not to measure risk, but rather to minimize it. For that purpose, it is useful to review the factors that determine the extent of leaching.

The factors that influence leaching rates can be divided into those that are characteristic of the treated product itself and those that are characteristic of the exposure conditions. Table 5 summarizes these factors (Lebow, 1993; Hingston et al. 2001) and indicates which generally increase or decrease leaching.

Table 5. Factors Affecting Leaching of Wood Preservative Components

PRODUCT FACTORS (Numbers in parentheses refer to explanatory notes following table)

Less/slower Leaching	More/faster Leaching
old wood (1)	newly treated wood (1)
properly cured treatment (1)	improperly cured treatment (1)
smaller surface area (larger pieces) (2)	larger surface area (smaller pieces) (2)
flat grain (2)	end grain (2)
less-permeable wood (2)	more-permeable wood (2)
sawn lumber (2)	round cross-section posts (2)
softwoods (2)	hardwoods (2)
sapwood (2)	heartwood (2)
lower preservative retention (3)	higher preservative retention (3)
trivalent chromium (4)	hexavalent chromium (4)
pentavalent arsenic (4)	trivalent arsenic (4)
chromium (4)	arsenic, copper (4)

most preservatives (Cr, As, Cu, Zn) (4)	boron (4)

EXPOSURE FACTORS (5)

Less/slower Leaching	More/faster Leaching
dry conditions	wet conditions
above ground	below ground
soil installation	water installation
heavy rain	drizzling rain (for same total amount of water)
alkaline pH	acid pH
poor soil (Cu)	soil with high organic content (Cu)
freshwater (CCA components)	saltwater (CCA components)
distilled or pure water	water with dissolved minerals or salts
	washing with bleach (oxidizing agent)

Explanatory Notes

1. Improperly treated wood will leach more preservative than properly cured wood. However, even properly cured wood will leach more when it is newly installed than after it has been in place for some time. For wood structures installed in water, the decrease in leaching rates over time is particularly dramatic. When preservative penetrates more deeply into wood, the leaching rate will decrease more slowly with time because of the greater reservoir of chemicals at some distance from the surface.

2. Leaching is proportional to the exposed surface area, so large structures will leach more than small ones, but leaching rates expressed on a per volume or per weight of wood basis will actually be larger for small pieces of wood because the ratio of surface area to volume is greater. This fact makes comparisons difficult between measurements on small test blocks and actual structures. Leaching is also greater from end grain than from flat grain, from round posts than from sawn lumber, from hardwoods than from softwoods, and from heartwood than from softwood. These last two cases occur because hardwood and heartwood don't bind preservative components particularly well.

3. Retention refers to the amount of preservative taken up by the wood when treated and is usually expressed in units of pounds per cubic foot. (Note that retention does not refer to how much preservative remains in the wood once it is installed in a structure.) Greater retention usually means greater leaching simply because more preservative is stored in the wood. Greater retention is specified in difficult applications, where extra decay resistance is needed. Highly permeable woods also appear to leach more readily, presumably because leachate moves through them more easily.

4. Differences in inherent leaching rates can be observed for the most common pressure-treated components. Hexavalent chromium, present in the treating solution for CCA, leaches much more readily than trivalent chromium, the predominant form after fixation occurs. (Trivalent chromium can be oxidized to hexavalent chromium in water or soil under certain conditions after leaching from wood.) Similarly, pentavalent arsenic found in CCA leaches less than trivalent arsenic. Both arsenic and copper are more likely to leach from the wood than chromium. Water soluble preservative components such as borates are the most likely to leach, and that is why borates are not recommended in water- or ground-contact exposures.

5. In terms of exposure conditions, faster leaching occurs in wet conditions, water contact, or ground contact. For a given volume of water, a slow drizzling rain causes

more leaching than a heavy rain. Acidic water tends to pick up more preservative chemicals than does alkaline water. In water-contact situations, saltwater or water with dissolved minerals or salts leaches more metals from wood than does fresh water or distilled water. The same is true of pentachlorophenol, but creosote behaves differently. PAHs from cresote leach about twice as rapidly in freshwater as in saltwater (Ingram 1982 as quoted in Sinnott 2000). Soils with high organic matter content that are in contact with treated wood can increase copper leaching because copper is specifically bound to certain ions found in the soil. This binding pulls copper from the wood, but it also keeps the copper relatively immobile in the soil.

Leaching from Deck Structures into Soil

Analysis of metal levels under various types of deck structures, for example, have given rather widely varied results, but it is clear that concentrations of arsenic and copper under CCA-treated decks can be many times above background levels and arsenic can exceed hazardous waste regulatory or cleanup levels (Stilwell and Gorny 1997; Townsend et al. 2001a and references therein). Contamination is not just at the surface, but can extend downwards 4 to 8 inches (Townsend et al. 2001a). It is possible that in some cases part of the contamination under structures came from sawdust or other construction residues. Arsenic buildup under treated structures can elevate health risks, especially for children who have access to these areas and who may ingest the soil itself or residues picked up on their hands. Given the extensive attention that arsenic leaching has received, as well as the impending rise in the use of copper and other "safer" replacements, we will focus most of our attention here on copper. Copper buildup in soil is less of a concern given its lower human toxicity, but these deck leaching studies are helpful in understanding how much copper would leach from treated structures built over water or impermeable surfaces that drain to surface water.

Relative leaching rates between different wood preservative treatments have not been extensively explored, and the data that do exist are not always useful, either because the conditions in different experiments are not comparable or because leaching rates are not referred to a standard material that can serve as a calibration point. Despite these difficulties, a recent report from Florida (Solo-Gabriele 2000) cited several studies that can be used to compare leaching rates of some preservative components for above ground or ground contact situations. Of particular interest are the relative leaching rates of copper from CCA as compared to arsenic-free "alternative" treatments such as ACQ or CC. Table 6 below shows some of these results. It is important to notice whether comparisons are made on a percentage or an absolute weight basis. These results show, for example, that the percentage of copper that leaches from CCA, ACQ, and CC is generally about the same. However, many arsenic-free preservatives contain considerably more copper than CCA does, and on a weight basis they will leach considerably more copper. That fact should be taken into account when choosing preservatives for use in or near aquatic systems because copper is much more toxic to the organisms present than either arsenic or chromium.

Table 6. Comparison of Relative Copper Leaching Rates between ACQ and CCA

Formulation	Retention	% Cu	Mass Cu	Method	Reference	Notes

		leached	leached	(see below)		
ACQ-B	.40	14.7	31.3	1	CSI 1995	
ACQ-D	.40	8.3	17.7	1	CSI 1995	
CCA	.40	2.4	1.4	1	CSI 1995	
ACQ-B	.40	17.6	37.5	2	Archer 1992	
ACQ-B	.60	19.0	60.7	2	Archer 1992	
ACQ-B	.40	15.1	32.2	2	Archer 1992	with water repellant
CCA	.60	17.9	15.9	2	Archer 1992	
ACQ-D	.25	7.9	10.5	3	Solo-Gabriele 2000	
CCA	.25	9.9	3.7	3	Solo-Gabriele 2000	
ACQ-B	.25	6.2	8.3	4	Solo-Gabriele 2000	center of deck
CCA	.25	7.9	2.9	4	Solo-Gabriele 2000	center of deck
ACQ-B	.25	12.5	16.6	4	Solo-Gabriele 2000	end of deck
CCA	.25	20.2	7.5	4	Solo-Gabriele 2000	end of deck
ACQ-D	.25	20.3	27.0	5	Solo-Gabriele 2000	
CCA	.25	32.0	11.8	5	Solo-Gabriele 2000	
ACQ-D	.40	31.6	67.3	5	Solo-Gabriele 2000	
CCA	.40	35.3	20.9	5	Solo-Gabriele 2000	
ACQ-D	.25	20.2	26.9	5	Solo-Gabriele 2000	
CCA	.25	13.0	4.8	5	Solo-Gabriele 2000	
ACQ-D	.40	21.6	46.0	5	Solo-Gabriele 2000	
CCA	.40	9.7	5.7	5	Solo-Gabriele 2000	

Method Descriptions:

Method 1: laboratory tests with small blocks immersed in de-ionized water or soil impregnated with fungus (AWPA method E11-97 or E10-91)

Method 2: "fungal cellar" tests using small blocks and soil maintained under conditions conducive to decay (AWPA method E14-94)

Method 3: field tests with small wood samples on concrete blocks, 18 month test duration

Method 4: field tests with simulated deck, 18 month test duration

Method 5: field tests with stake samples driven into ground, 18 month test duration

Looking at these results in detail, we see that on a percentage basis, the copper leaching from ACQ ranges from about 62% to more than six times as much as copper leaching from CCA, with most tests showing roughly equal percentage leaching. However, ACQ contains 3.69 times as much copper as CCA. When converted to a mass basis, the copper leaching from ACQ is seen to be comparatively much higher, with the lowest being about twice as much as CCA and the highest being more than 20 times higher. Although the test conditions are varied, ACQ apparently consistently leaches much more copper than CCA does under the same conditions.

Table 7 gives a similar comparison between copper leaching from CBA and CCA. The results again show more copper leaching from the arsenic-free treatment.

Table 7. Comparison of Relative Copper Leaching Rates between CBA and CCA

Formulation	Retention	% Cu	Mass Cu	Method	Reference	Notes
CBA	.48	2.1	4.9	1	Hickson 1999	above ground
CCA	.34	-11.3	-	1	Hickson 1999	above ground

CBA	.48	12.2	28.7	1	Hickson 1999	below ground
CCA	.34	3.2	1.6	1	Hickson 1999	below ground
CBA	.37	8.1	14.7	2	Hickson 1999	above ground
CCA	.43	2.1	1.3	2	Hickson 1999	above ground
CBA	.37	31	56.2	2	Hickson 1999	below ground
CCA	.43	25.4	16.1	2	Hickson 1999	below ground
CBA	.39	5.4	10.3	3	Hickson 1999	above ground
CCA	.40	-.4	-	3	Hickson 1999	above ground
CBA	.39	32.4	61.9	3	Hickson 1999	below ground
CCA	.40	17.0	10.0	3	Hickson 1999	below ground

Method Descriptions:
Method 1: field tests with stake samples, 13 month duration
Method 2: field tests with stake samples, 38 month duration
Method 3: field tests with stake samples, 42 month duration

We see that in these tests the CBA stakes lose more copper than the CCA samples. Even on a percentage basis, the losses are up to four times as much. CBA contains 2.7 times as much copper as CCA does. When expressed on a mass basis, the CBA is losing from 3.5 to 17.9 times as much copper. In addition, although not shown in the table, the CBA is losing virtually all of its boric acid in the below ground portion of the stakes, and about half in the above ground portions. Losses of the azole portion are generally intermediate between the copper and the boric acid.

One more set of tests compare CDDC with CCA, as summarized in Table 8 below.

Table 8. Comparison of Copper Leaching Rates between CDDC and CCA

Formulation	Retention	% Cu	Mass Cu	Method	Reference	Notes
CDDC	.065 as Cu	1.2	.78	1	Cooper 1993	
CDDC	.13 as Cu	0.9	1.2	1	Cooper 1993	
CDDC	.27 as Cu	0.59	1.6	1	Cooper 1993	
CCA	.55	4.59	3.7	1	Cooper 1993	
CDDC	.11 as Cu	10.1	11.1	2	McIntyre 1994	
CCA	.10 tot oxide	47.8	7.1	2	McIntyre 1994	
CDDC	.20 as Cu	21.3	42.6	2	McIntyre 1994	
CCA	.20 tot oxide	10.5	3.1	2	McIntyre 1994	
CCA	.43 to oxide	49.3	31.3	2	McIntyre 1994	
CDDC	.2 as Cu	55.3	111	3	McIntyre 1994	above ground
CCA	.6	none	-	3	McIntyre 1994	above ground
Formulation	**Retention**	**% Cu**	**Mass Cu**	**Method**	**Reference**	**Notes**
CDDC	.2 as Cu	77.4	155	3	McIntyre 1994	below ground
CCA	.6	71.6	63.5	3	McIntyre 1994	below ground

Method Descriptions:
Method 1: laboratory tests, small blocks in water, 2 week duration (AWPA Method E11)
Method 2: fungal cellar tests, , 18 month duration
Method 3: field tests with stake samples, 23 year exposure period.

The comparisons between CDDC and CCA are less clear-cut than the others considered above. For one thing, the retention levels are not expressed on the same basis, so the comparisons are not exact. Secondly, the results are somewhat inconsistent. In these sets of tests, the CDDC sometimes leached more and sometimes leached less copper than CCA. Leaching of the SDDC (not shown) was negligible in the two-week block tests, roughly half in the 18 month fungal cellar tests, and 68 to 73% in the 23 year stake tests.

A recent Forest Service Study (Forest Products Laboratory 2000) of a boardwalk structure in the Pacific Northwest is particularly interesting because portions of the structure were treated with four different preservative systems: CCA-C, ACZA, ACQ-B, and CDDC. Unfortunately, this study does not allow a good quantitative comparison of leaching rates between the four preservatives because the construction of the four sections were not simultaneous and thus they were exposed to different weather conditions; the soil, sediment, and water conditions under each section were not the same; the preservative retention levels were not the same for each section; and the ACQ-B timber was apparently over-treated. The authors consider the ACQ data to be a worst-case scenario. The copper levels in soil and sediment near the ACQ-treated wood were much higher than those near the other sections, and water concentrations of copper near the structure exceeded the EPA chronic criterion ninefold at both 15 and 162 days, although short-term copper concentrations near the ACZA portion of the structure actually spiked four times higher. It is not known to what extent the high copper leaching from the ACQ-treated wood was related to the over-treatment. Observed effects on aquatic invertebrates collected near the structures were characterized as subtle and not statistically significant, but the analysis was confined to statistical measures of abundance. Measured environmental levels of metals did decline from their peak values. This report concludes that biological effects from the structure were minimal and transitory, but acknowledges that copper levels in some cases exceeded water quality criteria and sediment threshold effects levels by a wide margin in a limited area. This report supports the conclusion that copper leaching from ACQ and ACZQ, which contain more copper than the other treatments, is probably greater, but the comparisons are somewhat suspect because these two boardwalk sections were exposed to more rainfall than the others, in addition to the other limitations discussed earlier.

An extensive laboratory study (Townsend 2001b) comparing the leaching rates and toxicity of leachates from CCA and several arsenic-free alternative treatments immersed in water yielded results similar to the field tests summarized by Solo-Gabriele et al. (Solo-Gabriele 2000). The study compared leachates from CCA, ACQ, CBA, CC, and CDDC. Samples of wood treated with these preservatives, as well as an untreated control, were ground up into pellets less than 3 mm in diameter and exposed to one of four different leaching fluids for 18 hours. The four leaching fluids were de-ionized water, TCLP leaching fluid of pH 4.93, SPLP leaching fluid of pH 4.22, and synthetic seawater. Although the study measured leaching of all preservative components, for the moment we will consider only the results for copper. Since these tests were performed on ground up samples rather than whole wood, the results will only be used for comparisons between treatment types and not for absolute leaching quantities. Table 9 presents the concentrations and percentage of copper leached for each wood type.

Table 9. Copper Concentration and Percent Leached by Extraction Fluid

Wood Type	DI %	DI mg/L	TCLP %	TCLP mg/L	SPLP %	SPLP mg/l	SW %	SW mg/L
CCA-I	5.6	3.3	14.6	8.7	6.9	4.1	16.7	10.0
CCA-II	5.8	4.0	12.4	8.7	5.7	4.0	14.3	10.0
ACQ-D	12.0	28.8	32.9	79.2	12.1	29.0	17.5	42.1
CBA-A	22.8	27.4	46.3	55.4	22.3	26.7	36.2	43.4
CC	39.8	64.6	72.9	116.5	38.7	61.8	34.5	55.1
CDDC	3.3	6.8	5.1	10.4	3.5	7.1	5.2	10.5

Key: DI=de-ionized water
TCLP=Toxicity Characteristic Leaching Procedure (pH 4.93)
SPLP=Synthetic Precipitation Leaching Procedure (pH 4.22)
SW=synthetic seawater

On a concentration basis (mg/L is proportional to total copper loss), copper leaching into de-ionized water was least for CCA, slightly higher for CDDC, and much greater for ACQ, CBA, and CC. This trend also held true for the two acidified extraction fluids, although actual amounts leached increased across the board. In the synthetic seawater, the results were similar except that copper leaching from CDDC was the same as from CCA. Except for CC, the amount of copper leaching from each material increased substantially in seawater as compared to de-ionized water. These results demonstrate that several arsenic-free wood treatments will leach much higher amounts of copper than CCA does under a variety of conditions, at least initially. In these short-term tests, CDDC emerged as an arsenic-free treatment that leached much less copper than the others. The co-biocides in the treatments were also measured in the leachate, but comparisons between the materials would require factoring in the toxicity of each co-biocide to the organisms of concern. It is noteworthy that in the leachate aquatic toxicity tests, the researchers reported that copper was responsible for most of the toxicity observed. However, they caution that before recommending one of these wood treatments over another a careful evaluation of the toxicity of the co-biocides, including toxicity to humans, be conducted by a toxicologist.

Leaching of Copper in Freshwater and Marine Environments
Many of the results cited in the last section suggest strongly that a number of copper-containing wood treatments are likely to leach much higher copper levels into aquatic ecosystems than CCA, raising the question as to whether these alternative treatments are really better choices than CCA for use in or near water. Townsend et al. (2001b) used a variety of toxicity assays to show that the leachate from ACQ, CBA, and CC-treated wood was significantly more toxic to aquatic organisms than leachate from either CCA or CDDC and that copper accounted for the majority of the toxicity of the leachates tested, while the co-biocides were secondary in importance. As will be seen in the section following this one, copper is generally considered one of the most toxic of the preservative components to fish. The Townsend study collected leachate for only 18 hours, so it may not predict long-term leaching trends. However, the small particle size would accelerate the leaching process so that the integrated leaching in this study would be comparable to a much longer exposure period for submerged timbers or pilings.

Brooks has conducted literature reviews of leaching studies in water environments and has derived empirical equations that can be used to estimate the loss rates of preservative components from some wood treatment systems as a function of time and other conditions (Brooks 1995; 1997a; 1997b; 1998; 2003a). Brooks' models are based on data sets that span longer time frames, typically a month to several months. For comparing loss rates between different preservative treatments, there may be some limitations due to differences in conditions in the original experiments on which the models are based. The CCA and ACQ models are based on measurements of treated yellow pine, while the ACZA and CuN models are based on Douglas fir. The ACQ and CuN models are only valid for fresh water. The models allow input of various geometries and water currents, and are designed to calculate both water and sediment concentrations downstream of treated material. The models are constructed in such a way that the preservative loss rate from a small area on the surface of the wood can be calculated independent of the details of the structure geometry and flow.

The equations derived by Brooks for the copper loss rate per unit of surface area (ug/cm^2/day) are shown below:

Material	Estimated Copper Loss Rate	
CCA	$\text{Loss} = \exp(-0.048*t)*0.51\exp(0.02*S)*(0.65(0.8462+\ln(0.71*R)))$	
ACZA	$\text{Loss} = 1908.6*\exp(-0.429*t - 0.383*pH)$	in fresh water
	$\text{Loss} = 32.5*\exp(-1.114*t)$	in salt water
ACQ	$\text{Loss} = 265.14*\exp(-0.924*t - 0.239*pH)$	for days <4.5 in fresh water
	$\text{Loss} = 4.25*\exp(-0.0175*t)$	for days $\geq$4.5 in fresh water
CuN	$\log_{10}(\text{Loss}) = 0.093 + 1.269*\exp(-0.1375*t)$	in fresh water

Where: t = time after installation in days
S = salinity in parts per thousand
R = preservative retention in kg/m^3

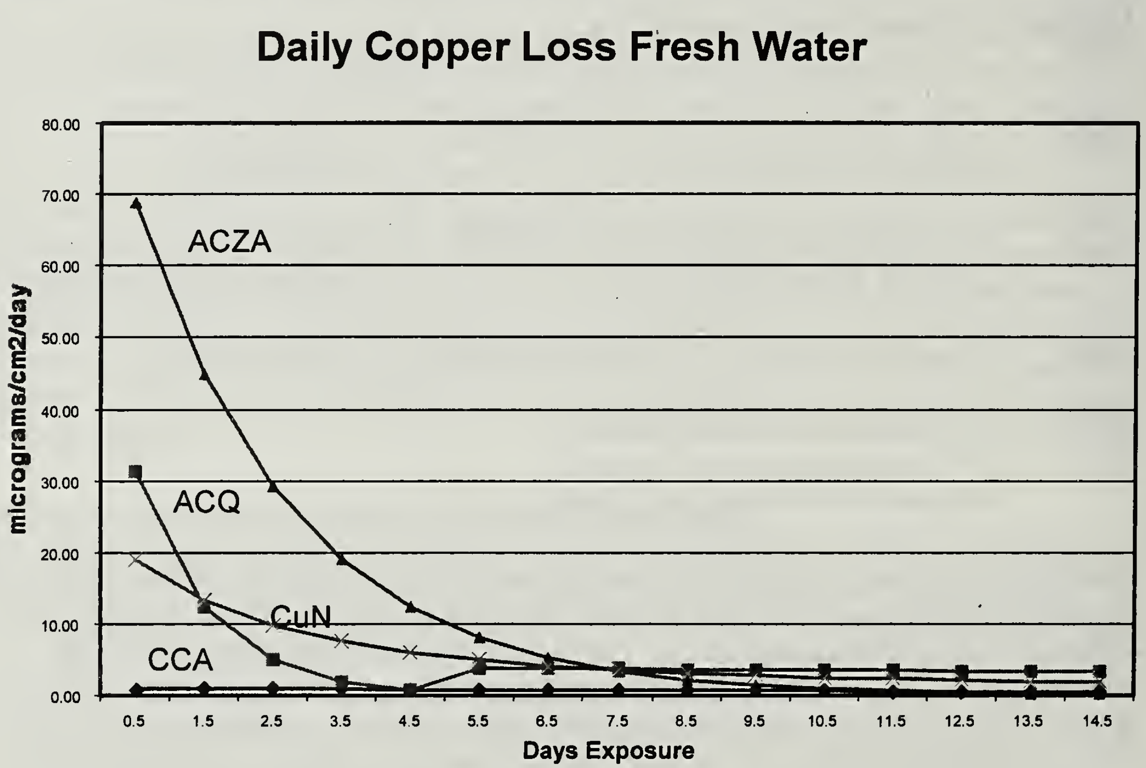
Using these equations to calculate copper loss rates per unit area of wood shows how the copper loss decreases over time from installation. Figure 1 shows the comparison for freshwater environments and Figure 2 shows the rates for marine environments. The calculations represent losses from a square centimeter of wood surface, independent of details of the structure or characteristics of the water except for salinity and pH. Fresh water is assumed to be pH 7 and salinity 0, while salt water is taken as pH 8 and salinity 30 parts per thousand. These calculations assume still water with no currents or flow. Preservative retention values used in the calculations are as follows (in units of pounds per cubic foot, or pcf):

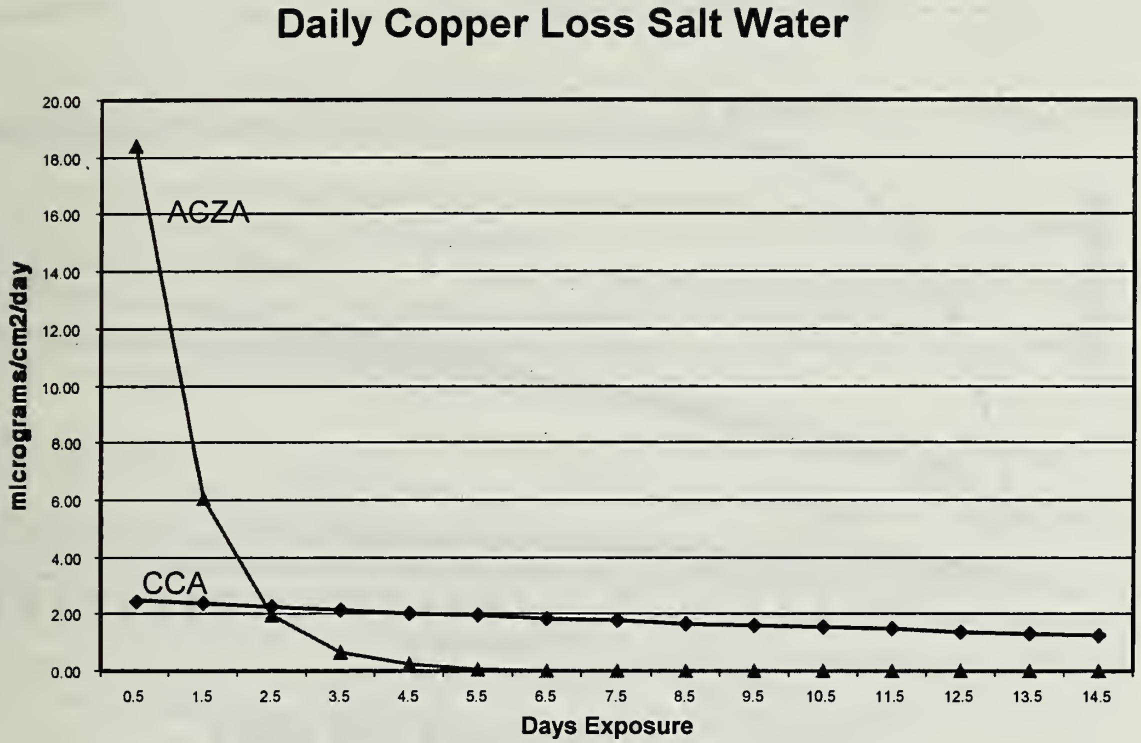
Preservative	Fresh water	Salt water
CCA	0.8	2.5

ACQ	0.4	Not modeled
ACZA	1.0	2.5
CuN	.08-.14	Not modeled

The apparent discontinuity in the ACQ curve at between 4 and 5 days occurs because the model uses two separate curves to fit the data for <4.5 days and for ≥4.5 days. The two equations do not yield the same values near the crossover point for pH = 7. The first data point is calculated at day 0.5 to average over the steeply changing loss rate on the first day.

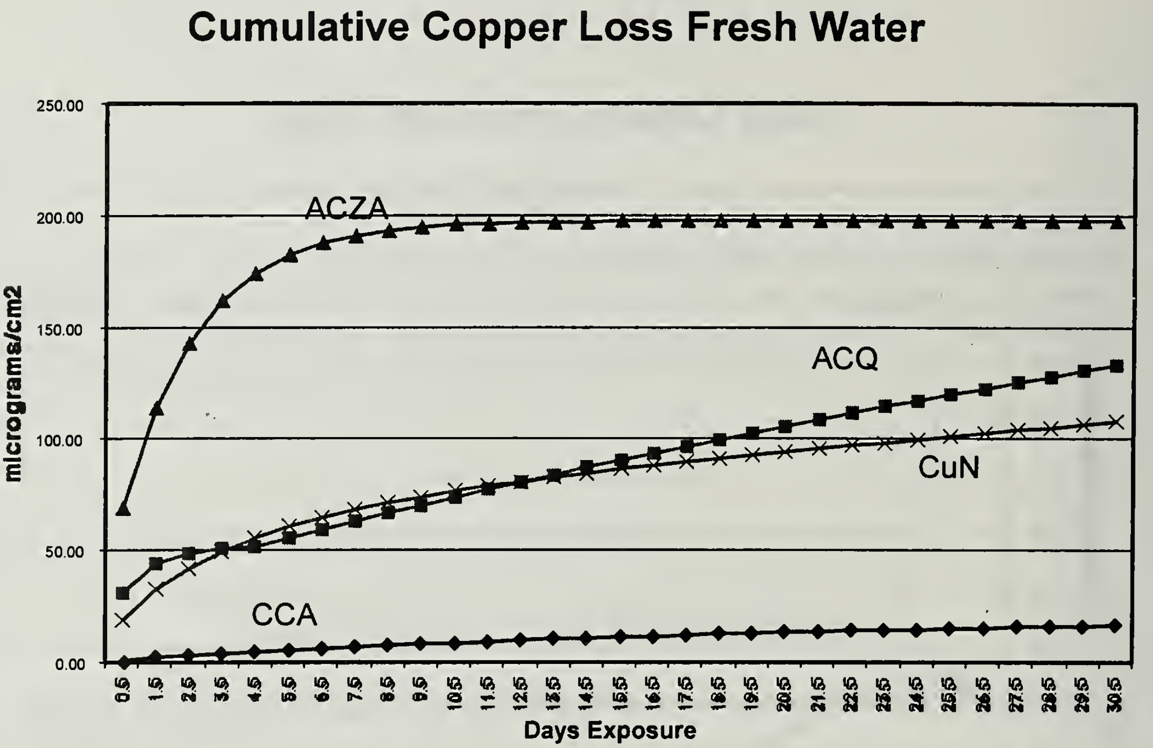
Figure 1. Calculated Daily Copper Loss Rates in Aquatic Environments





These model calculations indicate that leaching rates should decrease rather dramatically with time but that the time dependence is different for each treatment. In fresh water, copper coming from CCA has the lowest initial leaching rate but declines less rapidly than the others. Copper from ACQ drops rapidly at first, but then remains roughly constant after about 10 days. Copper from ACZA initially leaches at the highest rate in freshwater but then rapidly falls and is lowest at two weeks. The decline is even more rapid in salt water, but here the initial leaching from ACZA is less. These different decay rates make comparisons between the materials difficult. It is perhaps more instructive to look at cumulative leaching amounts rather than daily contributions. These are graphed below for the first four-week period, and summarized in Table 9 up to three months, except where this time period exceeds that of the measurements upon which the model is based.

Figure 2 Calculated Cumulative Copper Loss Rates in Aquatic Environments



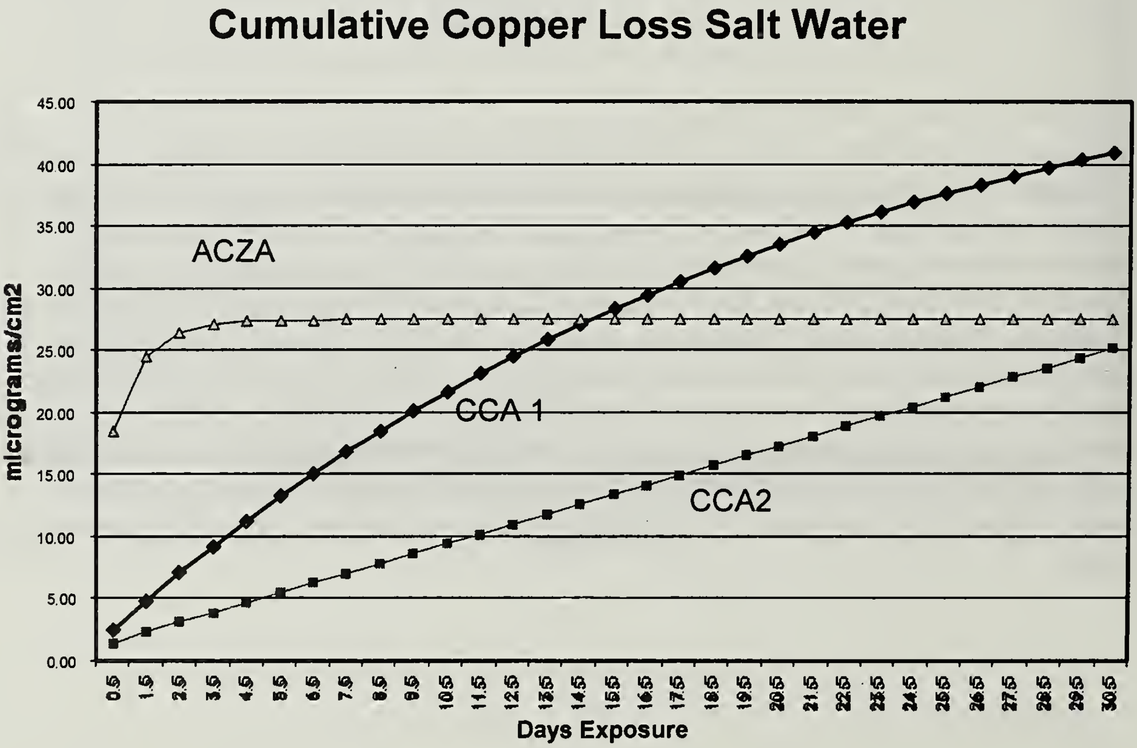


Table 9. Cumulative Copper Losses Over Different Periods (Units ug/cm^2)

	Fresh water				Salt water	
Elapsed Time	CCA	ACQ	ACZA	CuN	CCA	ACZA
1 day	1	31	69	19	2.5	18
1 week	6	59	188	65	15	27
1 month	16	128	197	105	40	27
3 months	21	---	----	---	52	----

If these models are correct, we can draw the following conclusions about these treatments under the conditions specified:
For fresh water
1. Copper leaching is least from CCA by a considerable margin, in general agreement with the measurements of Townsend et al.
2. Copper leaching from ACZA is initially largest but declines most rapidly, so that ACQ gradually catches up and may eventually surpass ACZA, though this crossover would occur beyond the proven applicability of the model.
3. Copper leaching from CuN appears closest to ACQ.

For salt water
1. Copper leaching is initially lowest from CCA, though more than twice as much as in fresh water, also in agreement with the measurements of Townsend et al.
2. Copper leaching from CCA surpasses that from ACZA at about 2 weeks. (Note: a newer model by Brooks (Brooks 2003b) appears to give somewhat different results for the CCA leaching rates, shown in the graph as CCA2. Unlike the earlier model, this one includes the effects of temperature and pH on copper leaching rates. The plot shown is for a water temperature of 13.5°C.)
3. No model was available for ACQ or CuN in salt water.

Although arsenic and chromium leaching from wood pilings could also be a concern, Brooks has summarized data from several studies that seem to show that copper would still be the component most likely to cause toxic effects. Townsend et al. also concluded that copper was of most concern. The calculations indicate that of the four preservatives modeled, in fresh water CCA contributes by far the least copper. In salt water, only two treatments were modeled, and their copper leaching rates are much more similar to each other than in fresh water. The next section looks in more detail at the aquatic toxicity of wood preservative leachates.

Aquatic Toxicity

Toxicity of wood preservative components to aquatic life is obviously a major concern when treated wood structures are placed in direct contact with water. Leaching of preservative chemicals is greatest under these conditions, though water concentrations of leached chemicals can be reduced by dilution and adsorption to (i.e. pollution of) sediments. Aquatic toxicity is also a concern for structures built directly over water or wetlands and for structures in close proximity to such habitat, where runoff can carry chemicals from the site to a storm sewer or other conduit.
Many wood preservative chemicals have considerable toxicity to fish and other freshwater or saltwater organisms. Most of the major preservative active ingredients are

listed as Priority Pollutants under the Clean Water Act. The EPA derives water quality criteria or standards for pollutants based on their toxicity levels. The criteria are intended to indicate water concentrations of the pollutants that are protective to most organisms. The lower the criteria, the more toxic the material. Table 12 shows existing criteria levels for chemicals considered here (US EPA 2001). "PP" indicates Priority Pollutant.

Table 12. Aquatic Toxicity Criteria for Wood Preservative Constituents

	PP	**Fresh water--(units ug/L)—Salt water**			
		acute	chronic	acute	chronic
Pentachlorophenol	yes	19	13	15	7.9
Creosote	*				
Arsenic	yes	340	69	150	36
Chromium (VI)	yes	16	11	1100	50
Chromium (III)	yes	570	74		
Copper	yes	13	4.8	9	3.1
Nickel**	yes	470	74	52	8.2
Zinc	yes	120	90	120	81

Notes:
*Creosote is not listed as a priority pollutant, but it contains a large number of PAHs that are individually listed as priority pollutants. **Nickel is a component of copper-8-quinolinolate.

Table 13 itemizes some of the predominant PAHs in creosote. Unfortunately, there are no EPA water quality criteria for any of these chemicals. "Fresh" and "Salt" columns indicate relative migration of each compound from treated pilings into fresh water and marine water, as measured in Alabama (Ingram 1982).

Table 13. Relative Leaching and Percent Composition of Major Cresote PAHs

Compound	**PP**	**Relative Leaching**		**% in creosote**
		Fresh	Salt	
Light PAHs				
Naphthalenes	yes	3342	1158	15.45
Phenanthrene	yes	660	620	12.90
Acenaphthene	yes	688	640	8.70
Fluorene	yes	405	388	7.45
Dibenzofuran		482	463	6.25
2-Methylnaphthalene		1151	784	2.15
1-Methylnaphthalene		982	784	incl. in Naphthalenes
Anthracene	yes	169	135	1.45
Biphenyl		196	155	1.35
Acenaphthylene	yes	256	238	1.02
Heavy PAHs				
Carbazole		368	207	
Fluoranthene	yes	184	124	7.45
Pyrene	yes	103	59	5.30
Chrysene	yes	36	9.7	1.63
1,2-Benzanthracene		43	25	0.20

It is quite clear from the tables above that aquatic toxicity is a concern with all of the listed wood preservative components, but copper stands out as the most toxic, with PCP (neglecting its contaminants) and probably creosote not far behind. This is a significant result because in the San Francisco Bay Area, seven sites, including most of the Bay itself, are currently listed as impaired for copper under Section 303(d) of the Clean Water Act (See Table 14 below).

Table 14. Bay Area Sites Impaired for Copper

Site	Current Status	Proposed Status
Carquinez Strait	impaired	threatened
San Francisco Bay, Central	impaired	threatened
San Francisco Bay, Lower	impaired	threatened
San Francisco Bay, South	impaired	threatened
San Pablo Bay	impaired	threatened
Suisun Bay	impaired	threatened
Sacramento S. Joaquim Delta	impaired	threatened
Petaluma River	not listed	impaired

The California Regional Water Quality Control Board is currently proposing to delist most of these sites for copper and move them to a new, preliminary “watch” list subject to action of dischargers over the next listing cycle. Copper is considered to threaten water quality in these areas, and they would be re-listed as impaired if pollution prevention plans are unable to decrease or hold concentrations at current levels. Given this situation, additional copper inputs to these areas would be inadvisable. Selecting copper-based wood preservatives to minimize leaching is complicated by lack of complete data on leaching rates for all of the products. The available science does not support the conclusion that copper leaching rates are in proportion to the copper content of the material (shown in Table 15). The results of Townsend et al. (Townsend 2001b) suggest that CDDC leaches the least copper of the non-arsenical alternatives tested, with ACQ-D second. An interesting alternative for sensitive aquatic environments may be plastic-coated treated lumber.

Table 15. Copper Content of Copper Wood Preservatives

Preservative	% ingredient	% Copper by weight
ACC	31.8 CuO	25.4
ACA	49.8% CuO	39.8
ACZA	50% CuO	39.9
CCA	18.5% CuO	14.8
ACQ	66.7% CuO	53.3
CC	62.3% CuO	49.8
CBA	49% CuO	39.1
CDDC	17-29% CuO	13.6-23.2
CuN	60-80% CuN	0.5-2% Cu

No sites are listed for any of the other wood preservatives except nickel (which is a component of Copper-8-quinolinolate, but many sites are listed for dioxins and furans (contaminants in PCP), and some sites have significant PAH contamination (See Table 16 below). In addition, four sites are listed as impaired due to sediment toxicity and benthic community effects.

Table 16. Bay Area Sites Impaired for Dioxins, Furans, and Sediment Toxicity/Benthic Community Effects

Site	Dioxins	Furans	Sediment	Benthic
Carquinez Strait	impaired	impaired		
Richardson Bay	impaired			
San Francisco Bay, Central	impaired	impaired		
San Francisco Bay, Lower	impaired	impaired		
San Francisco Bay, South	impaired	impaired		
San Pablo Bay	impaired	impaired		
Suisun Bay	impaired	impaired		
Sacramento S. Joaquim Delta	impaired	impaired		
Petaluma River	not listed	impaired		
Stege Marsh			impaired	impaired
Mission Creek			impaired	impaired
Islais Creek			impaired	impaired
Peyton Slough			impaired	impaired

Although no water quality criteria currently exist for creosote or any of the PAHs that it contains, the conclusion (Brooks 1995) that sustained concentrations of 30 to 40 ug/L can have chronic effects suggests that valid criteria would need to be well below those levels to guarantee no effect. Thus, we conclude that creosote is potentially as toxic as PCP and perhaps as toxic as copper. Wood treated with creosote and PCP are both prohibited in lakes in Washington state by state law (WAC 220-110-060).

A sense of the relative aquatic hazard posed by the three major wood preservative metals can be obtained by comparing typical leaching rates and water quality standards. Table 17 below (from Brooks 1997b) compares average leaching rates for the metals in CCA from three different water exposures.

Table 17. Average Leaching of CCA Components In or Above Water

End Use and Environment	**Copper**	**Arsenic**	**Chromium**
		(Units $ug/cm^2/day$)	
Submerged in fresh water	1.62	8.39	0.52
Submerged in marine water	2.60	1.09	0.12
Above water & exposed to 35 inches average rain	1.20	1.80	0.20

A relative hazard index can be constructed by dividing the leaching rate by a measure of aquatic toxicity such as EPA's chronic water quality criterion (CWQC):

Hazard Index = leaching rate / CWQC

This index will increase when the leaching rate is high and when the CWQC is low (i.e. more toxic). It has no meaning in the absolute sense and can only be used to compare the three components in CCA. The values for the hazard index are as follows (low numbers are better):

Table 18. Relative Hazard Index for CCA Components In or Above Water

End Use and Environment	Copper	Arsenic	Chromium
Submerged in fresh water	34	12	4.7
Above fresh water	25	2.6	1.8
Submerged in salt water	84	3	.24
Above salt water	39	5	0.4

These numbers indicate that for aquatic organisms, copper from CCA poses from about 3 to as much as 28 times as much risk as does arsenic from CCA.

Conclusions:
For fresh water, CCA seems clearly to contribute the least copper of the three copper-based treatments. Even though arsenic leaching exceeds copper leaching, the likelihood of exceeding the continuous chronic water quality criterion is still about three times lower than for copper.
For salt water, either CCA or ACZA would be superior to ACQ, based on copper leaching. Arsenic and chromium contributions should be negligible in comparison.

Aquatic Risk

The actual risk posed to aquatic species from wood preservatives is determined by many factors in addition to the toxicity of the chemicals. The rate at which chemicals leach into the water is affected by the size and shape of the structure, the rate of flow of water around it, the age of the structure, water hardness and salinity, and so on. Concentrations of the chemicals in the water are also determined by the flow patterns around the structure and by adsorption to sediments. Mathematical models have been designed to estimate the interplay of these factors and to predict water concentrations that may occur. Comparison of estimated pollutant concentrations to toxicity values or environmental standards is often used to judge whether a particular project is expect to have unacceptable impacts. Such tools can have value when used carefully and within their realm of applicability, and when verified experimentally. They can be misleading, however, if they do not take into account multiple pollutants or stressors in the environment that may simultaneously affect populations. Even when calculations show (and experiments support) that leaching or runoff from a given material is small compared to toxic levels, better choices may be made, especially in water bodies that are already impaired by one or more of these pollutants. Quantitative risk assessments are far beyond the scope of this project and would need to be performed on a site-specific basis. The approach taken will be to avoid using those materials that are most toxic to aquatic species for projects in, over, or near water.

Persistent, Bioaccumulative Toxic Chemicals (PBTs)

In recent years much attention has been paid to toxic chemicals that persist in the environment and bioaccumulate. The nomenclature has varied from POPs (persistent organic pollutants) to BCCs (bioaccumulative chemicals of concern) to PBTs, and we will use the latter designation in this report. Whatever they may be called, PBTs pose a serious threat, and many organizations including the United Nations, International Joint

Commission on the Great Lakes, and U.S. EPA have proposed strategies to reduce or eliminate them. The Washington State Department of Ecology is working on a statewide plan to reduce and where possible eliminate them from the environment.

In 1992, the Province of Ontario Ministry of the Environment constructed a list of 27 candidate substances for future bans or phaseouts. This list was adopted by the Washington State Department of Ecology as a working list, which was later shortened to 12 substances, but has now increased to 25. The same 12 chemicals have also been identified by EPA (USEPA 1999d) and the U.S. Canada Binational Agreement (Canada-US Binational Toxics Strategy, 1997) as the highest priority. A second tier of chemicals has been identified as level II substances by the U.S. Canada Binational Agreement. Both the original Ontario list of 27 and the Level II list contain pentachlorophenol and PAHs such as those in creosote. The priority 12 list also contains dioxins and benzo[a]pyrene. These PBT listings are shown in Table 17 below with the symbol "X" or the designation "level I" or "level II."

The EPA has developed a prioritized chemical list of 879 chemicals "based on their tendency to persist in the environment once released (i.e., persistence), their tendency to accumulate in animal tissues (i.e., bioaccumulate), and their potential to cause adverse effects in humans or aquatic ecosystems (i.e. toxicity)." (USEPA 1997b) The list was derived using EPA's Waste Minimization Prioritization Tool. The stated purpose of the prioritized chemical list is threefold:

1) "to reduce, as a nation, the presence of the most persistent, bioaccumulative, and toxic chemicals in hazardous wastes 25% by the year 2000 and 50% by the year 2005; For example, "Government agencies could focus source reduction and recycling activities on high-scoring chemicals and the hazardous wastes that are likely to contain these chemicals."

2) to avoid transferring these chemicals across environmental media; and

3) to ensure that these chemicals are reduced at their source whenever possible, or, when not possible, that they are recycled in an environmentally sound manner."

PBT scores from the Waste Minimization Prioritization Tool (WMPT) are also shown in Table 17. Based on the WMPT, pentachlorophenol and the group of potentially carcinogenic PAHs in creosote have by far the highest PBT scores of 17 to 18, respectively, out of a possible 18 points. The group of metals, including arsenic, copper, chromium, nickel, and copper are all ranked at 13 points. These metals score lower mainly because they don't bioaccumulate. EPA has also developed a list of 30 "Waste Minimization Priority Chemicals" that it considers PBTs based on an "agency-wide expert review of scientific information." This list includes PCP and most PAHs.

Table 17. PBT Status of Wood Preservative Components

	-------Government PBT Lists-------				WMPC List[5]	WMPT score[6]
	UN[1]	US/CA[2]	EPA[3]	Ontario[4]		(6=best; 18=worst)
PCP		level II		X	X	17
HCB	X	level I	X	X	X	18
PCDD	X	level I	X	X	X	ND
PCDF	X	level I	X	X	X	ND

TCDD	X	level I	X	X	X	18
Creosote		level II (see detail below)		(See detail below)		10-18, av=13
Arsenic						13
Chromium (VI)						13
Chromium (III)						13
Copper						13
Nickel						13
Zinc						13

Compound	% in creosote[7]	---PBT Lists---		WMPC List[5]	WMPT Score[6]
		EPA[3]	Ontario[4]		
Light PAH					
Naphthalenes	15.45			X	11
Phenanthrene	12.90		X	X	
Acenaphthene	8.70			X	13
Fluorene	7.45			X	13
Dibenzofuran	6.25			X	10
2-Methylnaphthalene	2.15				
1-Methylnaphthalene					
Anthracene	1.45		X	X	12
Biphenyl	1.35				
Acenaphthylene	1.02X				
Heavy PAH					
Carbazole					
Fluoranthene	7.45			X	17
Pyrene	5.30			X	
Chrysene	1.63				16
1,2-Benzanthracene	0.20				
Potentially Carcinogenic PAHs					
Benzo(a)anthracene	.85		X	X	18
Benzo(k)fluoranthene	.40			X	17
Benzo(ghi)perylene	.08		X	X	17
Indeno(1,2,3-cd)pyrene	.05			X	17
Benzo(b)fluoranthene	.60			X	18
Benzo(a)pyrene	.20	X	X	X	18

Notes:

1 United Nations POPs Treaty
2 U.S. Canada Binational Agreement
3 US EPA highest priority PBTs
4 Province of Ontario Ministry of the Environment
5 US EPA Waste Minimization Priority Chemicals
6 US EPA Waste Minimization Prioritization Tool
7 Ingram 1982

Disposal

Another important consideration in selecting wood preservatives is whether treated wood or sawdust or other wood waste would need to be disposed of as a hazardous waste rather than as solid waste. At the federal level, treated wood is not specifically listed as a hazardous waste under RCRA and therefore is not considered a hazardous waste unless it exhibits a hazardous waste characteristic. In the case of treated wood, that characteristic would be failing the Toxicity Characteristic Leaching Procedure (TCLP). Wood treated with PCP or creosote routinely passes TCLP. Wood treated with arsenic might be expected to fail TCLP, but arsenically treated wood and wood waste are exempt from the federal designation as hazardous waste provided they are generated from a person using the wood for its intended purpose.

California law contains two exemptions that can apply to treated wood that would otherwise be classified as hazardous waste. One is for treated wood that has been removed from public or private utility service, provided the material is not considered federally hazardous and provided it is disposed in a landfill with proper leachate control and liner that is authorized to accept such waste. The other exemption applies to wood that is reused in a way consistent with proper use of the preservative.

If a material does not qualify for one of the exemptions, proper disposal is governed by a determination as to whether or not the waste is hazardous. In California, this determination must be made by the generator of the waste. The classification of the waste as hazardous depends on four characteristics: ignitability, corrosivity, reactivity, and toxicity. For treated wood, the issue would be toxicity. The California toxicity characteristic is determined two waste extraction tests, the TCLP required by RCRA and the Waste Extraction Test (WET). Both tests measure the amount of toxicant solubilized under conditions that might occur in landfills, but the WET test is "more vigorous in extracting inorganic constituents." The threshold for soluble extraction is called the Soluble Threshold Limit Concentration (STLC). In addition, California has established Total Threshold Limit Concentrations (TTLC) for 20 inorganic and 18 organic substances in an effort to minimize the effects of land disposal of persistent and bioaccumulative substances. STLCs and TTLCs for wood preservative components are listed in Table 18.

Table 18. Limit Concentrations for Hazardous Waste Designation in California

Substance	STLC (mg/kg)	TTLC (mg/kg)
arsenic and/or arsenic compounds	5.0	500
chromium (VI) compounds	5.0	500
chromium and/or chromium (III) compounds	560	2500
copper and/or copper compounds	25	2500
nickel and/or nickel compounds	20	2000
zinc and/or zinc compounds	250	5000
pentachlorophenol	1.7	17

Testing conducted at the Florida Center for Solid and Hazardous Waste Management found that samples of CCA-treated wood ground into sawdust routinely failed the TCLP leaching test, with an average arsenic leachate concentration of 6.7 mg/L for all sample types, compared to the regulatory limit of 5 mg/L (Townsend 2001). Copper and chromium levels did not exceed limits for any samples. Leachate concentrations decreased as particle size increased, with extracted arsenic concentrations below the 5 mg/L limit for all but one sample of chipped wood, and all samples of 20-gram and 100-gram blocks. Retention levels in the wood were .25 and .4 pcf, and no correlation was found between retention level and leaching. The implication of this testing seems to be that CCA-treated wood would generally fail the TCLP test (and presumably the more sensitive WET test) for arsenic if ground into sawdust but not if tested whole.

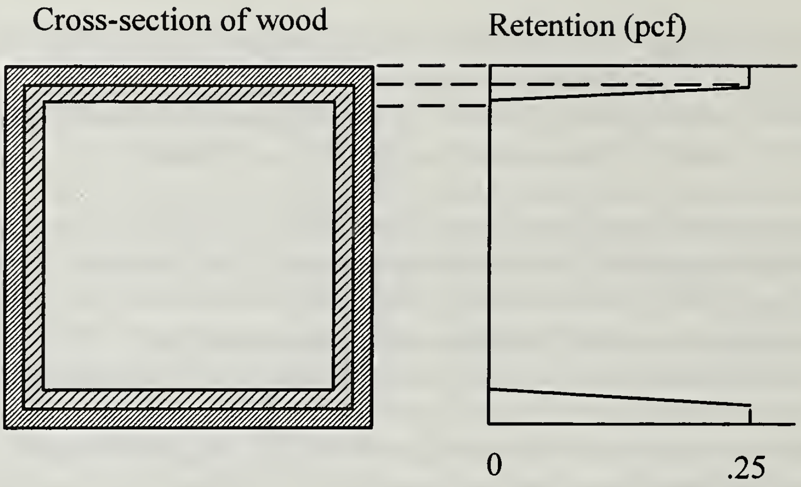
The California Department of Toxic Substances Control has not done a comprehensive study of various treated wood materials to determine which, if any, would be classified as hazardous waste under the WET test. However, according to David Elias of the Regional Water Quality Control Board, pressure-treated wood (presumably mostly CCA) sometimes passes and sometimes fails the tests, possibly because of variations in how the wood was treated and the conditions to which it was exposed before testing. (Elias 2001) Based upon this information, it seems that a large amount of testing would need to be done to understand which waterborne treatments would be expected to fail the STLC test.

The TTLC test is potentially easier to predict, since only the total concentration of the compound in the wood needs to be determined. In the case of CCA, at a uniform retention of 0.25 pcf, the concentrations of As, Cu, and Cr can be calculated, as shown in Table 19 (Profile A), assuming a typical wood density of 0.45. This calculation shows that CCA has nearly four times the TTLC limit for arsenic, easily classifying the wood as a hazardous waste. In reality, the concentration of metals in the wood will not be uniform, but will be greater in the outer portions of the wood, where the specified retention levels should be met. Average retention thus will be lower, especially for larger pieces of wood. Another factor affecting the concentration of metals is the moisture content of the wood. Since water is much heavier than wood fiber, the amount of water held in the wood has considerable influence on the weight (density) of a particular piece of wood. As wood dries out, the metals concentrations would rise. To show how more realistic distributions of preservative would change the total concentration of arsenic, Profile B was chosen to represent a section of 4x4 timber treated to a retention of .25 pcf for the outer 10 mm, declining to zero over the next 10 mm, with no penetration at all inside 20 mm. In this case, the concentration within each concentric ring is calculated separately and weighted by the corresponding area. The result is an average concentration half that of a fully treated sample, but the wood still exceeds the TTLC limit by a factor of two. Wood treated to higher retention levels contains proportionally larger amounts of each metal.

Table 19. Calculated Total Metal Concentrations for CCA-Treated Wood (.25 pcf)
(Concentrations exceeding TTLC limits are shown in boldface type.)

Substance	Concentration (mg/kg)		TTLC
	Profile A	Profile B	
Arsenic	**1957**	**978**	500
Copper	1305	652	2500
Chromium	2181	1090	2500

Figure 3. Diagram of Retention Profile B



Similar calculations for other treated wood products are shown in Table 20. All of the materials containing arsenic appear to fail TTLC, even in Profile B which assumes average preservative retention throughout the wood at 50% of specification. Many of the copper-containing treatments also fail for copper at uniform .25 pcf, but real samples might pass if penetration is much lower. Wood treated to .4 pcf and higher retentions would likely fail. Very thick materials such as pilings might pass if a sufficient volume of untreated wood exists in the core.

Table 20. Calculated Total Metal Concentrations for Other Treated Wood (.25 pcf)
(Concentrations exceeding TTLC limits are shown in boldface type.)

Substance	Concentration (mg/kg)		TTLC
	Profile A	Profile B	
ACC			
Copper	2242	1121	2500
Chromium	**3130**	1565	2500
ACA			
Copper	**3511**	1755	2500
Arsenic	**2888**	**1444**	500
ACZA			
Copper	**3525**	1762	2500
Zinc	1772	1090	5000
Arsenic	**1438**	**719**	500
ACQ			
Copper	**4702**	2351	2500
CC			
Copper	**4392**	2196	2500

(continued on next page)

CBA			
Copper	**3454**	1727	2500

Conclusion: Wood treatments containing arsenic appear likely to fail the TTLC test in all cases, although detailed measurements should be done to confirm that the distribution of arsenic in the wood is sufficient to exceed the criteria for various timber dimensions. Copper-treated wood probably passes the TTLC in most cases, at least at the lowest retention levels, but measurements should be done on samples of wood with the highest copper retentions, percent copper, and copper penetration depth.

Local Regulations and Policies

Three resolutions passed by the San Francisco Board of Supervisors (and now official city policy) have implications for the selection of wood preservatives. The first resolution, passed on March 22, 1999, placed a high priority on phasing out sources of dioxin (SFBS 1999). The second resolution, passed on May 21, 2001, expressed the city's preference for non-wood utility poles and directed pole users to step up their use of alternatives (SFBS 2001a). The third resolution, passed on November 20, 2001, requires that arsenic-treated wood not be used on city projects and that departments that maintain existing arsenic-treated structures where human contact is likely keep them sealed and develop plans to remove them. The City's selection criteria for wood preservatives need to be in accord with all appropriate city policies. The three resolutions are spelled out in more detail below.

Dioxin Policy

The dioxin policy defines dioxins to include not only polychlorinated dibenzo-p-dioxins, but also polychlorinated dibenzofurans (PCDFs) and polychlorinated biphenyls (PCBs). Thus this policy does apply to pentachlorophenol, since it contains both PCDD and PCDF. This resolution requires in part that the City and County of San Francisco:

* designate dioxin pollution as a high priority for immediate action to restore water, air and total environment quality and protect public health;
* direct the San Francisco Public Utilities Commission to exercise its full power and jurisdiction to phase out dioxin at its sources;
* work with other local governments to convene a regional task force to identify the sources of regional dioxin pollution, including sources from all municipal practices; this task force would also develop dioxin pollution prevention strategies along with any associated cost implications, and make any further recommendations to implement the intent of this resolution;
* implement dioxin pollution prevention practices as recommended by the regional task force in all waste management and recycling programs by City and County departments, and encourage such pollution prevention practices in all hospitals and businesses that operate in the City and County of San Francisco; and be it
*assess its current purchasing practices and encourage that less-toxic, non-chlorinated products and processes, such as chlorine-free paper and PVC-free plastics are supported and used by the City and County of San Francisco to the extent possible as recommended by the regional task force.

Conclusion: Continued use of PCP-treated wood appears to be in conflict with city policy.

Wood Pole Policy
The wood pole resolution urges the City and County of San Francisco to "urge PG&E, Pacific Bell, and manufacturers of non-wood utility poles to conduct a feasibility study of alternatives to chemically treated wood utility poles and to urge all utility pole owners to take steps to protect public health and the environment from wood preservatives in utility poles." Although not binding on the private utilities, the resolution also requests that they:
* cover the first five feet above the ground of all existing treated wood poles within 100 feet of elementary schools and parks (and daycare centers if requested to do so)
* report annually on the materials used when poles are replaced.

Conclusion: This resolution expresses a clear preference for poles not made of treated wood. In recognition of this policy, it is suggested that before making any selection of wood preservatives for any purpose that the following questions be asked:
* is wood necessary for this project?
* if wood is chosen, is treated wood necessary for this project?

Arsenic Ordinance
The arsenic resolution is aimed at phasing out the use of arsenic-treated wood in city projects and protecting residents from such wood already in place. This resolution requires:
* developing a list of environmentally preferable alternatives to preservative-treated wood containing arsenic for non-saltwater immersion uses;

* all City Departments and contractors performing work pursuant to City contracts to purchase only pressure treated wood products from the Department of the Environment's approved list of environmentally preferable alternatives to preservative-treated wood containing arsenic;

* all City departments who own or maintain existing City playground and park equipment, such as benches, picnic tables and playsets, constructed with preservative-treated wood containing arsenic to develop a timeline and cost analysis for replacing them with arsenic-free alternatives and present the timeline within six months of the passage of this resolution to the Commission on the Environment;

* all City Departments who maintain existing playground and park equipment made of preservative-treated wood containing arsenic where contact with human skin is likely to ensure proper sealing in accordance with California Health and Safety Code section 115775 until such time that all structures have been replaced with arsenic-free alternatives;

* preservative-treated wood containing arsenic not be re-used, burned or used for wood chips or mulch, but be disposed of in an approved landfill;

* all City Departments who own, purchase or maintain City playground and park equipment to place warning labels indicating they are constructed out of preservative-treated wood containing arsenic;

* urging the State of California to stop purchasing preservative-treated wood containing arsenic, replace all existing state park equipment (such as benches and picnic tables) constructed with preservative-treated wood containing arsenic with arsenic-free alternatives as soon as practicable, and ensure sealing of existing structures in accordance with California Health and Safety Code section 115775 until such time that all structures have been replaced with arsenic-free alternatives;

* investigating the possibility of a citywide ban on the sale and installation of preservative-treated wood containing arsenic and report back to the Commission on the Environment within six months;

* the Port of San Francisco to report back to the Commission on the Environment within six months and annually thereafter on alternatives to preservative-treated wood containing arsenic for use in saltwater immersion environments and to seal sections of docks and piers where frequent human contact is likely;

* the Port of San Francisco to require that all treated wood purchased for use in Port facilities be certified as produced in conformance with the Best Management Practices for Treated Wood Used in Aquatic Environments; and

* the Mayor and the Board of Supervisors to ban the use of pressure-treated wood containing arsenic in all saltwater immersion environments by January 1, 2005.

Conclusion: the use of arsenic-treated wood (except in saltwater immersion environments) is against city policy.

Drawbacks of Alternative Materials

The hazards presented by wood preservatives can be eliminated if wood preservatives are not used. This statement does not necessarily mean that alternative materials are hazard-free or do not present other drawbacks. For example, the Western Wood Preservers Institute (WWPI 2001) claims that if steel utility poles are used instead of wooden ones, almost twice as many poles of the same size would be required. In addition, they cite limited research indicating that zinc leaching from galvanized steel poles can contaminate surrounding soil. Steel production uses energy and produces pollution, although it does recycle scrap materials. To adequately compare such different materials as steel and treated wood would require a life-cycle analysis that is beyond the scope of this project.

Life cycle analyses are difficult to interpret when different materials or processes score better in one aspect but worse in another, requiring "apples versus oranges" comparisons.

Recycled plastic wood may also leach chemicals that could affect aquatic life. A 1992 study (Weis et al. 1992) compared the effects of leachates from CCA-treated wood and recycled plastic on a limited number of estuarine species. The effects observed from CCA leachate were clearly more severe, including depression of limb regeneration in fiddler crabs, reduced or inhibited fertilization in sea urchins, snail mortality, and chlorosis of algae. Effects were seen from the plastics as well. Limb regeneration was accelerated in fiddler crabs. Some reduction of fertilization and reduction of larval growth in sea urchins was observed. Spectrometry revealed a large number of chemicals leached in various quantities from the plastic. The environmental significance of the results is not known, but the researchers conclude that the plastic is a far less toxic material than the treated wood on the basis of the leachate tests.

Some alternative wood treatments may have other disadvantages, such as corrosion of metal hardware, mechanical properties, and higher costs. Solo-Gabriele et al. recently reported on the results of corrosion tests for ACQ-D, CBA, CC, and CDDC relative to CCA (Solo-Gabriele 2000). They report that ACQ is corrosive to mild steel and aluminum, and may be mildly corrosive to brass and hot-dipped galvanized fasteners. Copper citrate (CC) is also corrosive to mild steel and hot-dipped galvanized fasteners, but not to aluminum. CBA and CDDC have low corrosivity, comparable to CCA. It is very important that manufacturer's recommendations be followed in selecting hardware for use with treated wood. Table 20 lists recommendations for some alternative wood treatments as compiled by Solo-Gabriele.

Table 20. Manufacturer Metal Fastener Recommendations

Chemical	Metal Fastener Recommendation
ACQ	hot-dipped galvanized or stainless steel
CBA	hot-dipped galvanized, nickel coated, stainless steel fasteners, or non-ferrous metals
CC	stainless steel, galvanized staples and galvanized wire for use in vineyards
CCA	hot-dipped galvanized or stainless steel fasteners
CDDC	hot-dipped galvanized or stainless steel fasteners

With regard to mechanical properties, Solo-Gabriele found that the mechanical properties of alternative–chemical treated wood (ACQ, CC, CBA, and CDDC) were similar to those of CCA. Their cost comparison for a 12-foot deck board treated with CCA, CDDC, and ACQ found the alternatives to be somewhat more expensive. The average price for CCA was $8.94, while CDDC cost $10.29 on average, and ACQ cost $9.90.

Selection Criteria for Acceptable Wood Treatments

In consideration of the information presented in this report and in consultation with the San Francisco Department of the Environment, the following selection criteria are proposed for identifying acceptable wood treatments:

1. If a pressure treated product, treatment must be standardized by AWPA for the intended use. This requirement helps ensure that the treatment meets specifications to minimize leaching.
2. Product must not be used in ways that EPA prohibits or discourages.
3. Product or use must not violate state or local law, policy, or published best management practices.
4. Product may not be contaminated with dioxins.
5. Product, constituents, or contaminants may not be listed on the EPA Priority PBT list or the EPA Waste Minimization Priority Chemicals list.
6. Product (or components) should not contain known, likely, or probable human carcinogens listed by EPA, IARC, NTP, or State of California.
7. Product (or components) should not be listed as reproductive or developmental toxicants by the State of California.
8. For structures built in or over water, or where significant runoff is likely to occur, the use of copper should be minimized. If copper-based products are used, products with the lowest leaching potential should be chosen.
9. Material must not designate as a hazardous waste using criteria set by the State of California.

Results

The criteria listed above should be applied separately for each proposed wood use scenario, as detailed below. However, certain preservatives fail some of the criteria regardless of the use scenario:

PCP: carcinogen, dioxin content, PBT
Creosote: carcinogen, PBT content
Arsenicals (CCA, ACA, ACZA): carcinogen (arsenic), hazardous waste
CDDC: reproductive toxicant (SDDC)

Several wood treatments contain chromium VI, which is a known human carcinogen, but this chromium is converted to chromium III during fixation. Although oxidation back to the +6 valence state can occur in the environment under certain conditions, exposure to chromium VI is much less likely than to chromium III. In addition, chromium leaches from wood much less than either arsenic or copper. Thus, the presence of chromium VI in the treating solution is not considered to violate the criterion for carcinogens.

Risk Scenario A

Description: outdoor, likely human contact (especially children), water contact unlikely

Examples: decks, railings, stairways, picnic tables, benches, playground equipment, garden structures.

All of these uses fall under AWPA Use Category UC3B. Of all the treatments considered here, only borates do not have standards for these uses. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above. EPA does not recommend either PCP or creosote for uses with high likelihood of skin contact unless surfaces are sealed. Use of these two treatments is not recommended for decks unless surface is clean and

free of residue. Borates would be inappropriate for outdoor use because they are highly soluble and leach readily. Acceptable treatments thus include copper or zinc without arsenic or chromium: Cu8, CuN, CBA, ACC, AAC, ACQ, CC, ZnN. Preferred materials, however, include non-wood substitutes such as recycled plastic where available and appropriate (tables, playground equipment, decking, benches, etc) or rot-resistant woods without treatment. Untreated or painted surfaces are also preferred where practical.
Acceptable: recycled plastic, rot resistant woods, painted wood, Cu8, CuN, ACC, AAC, ACQ, CC, ZnN, CBA
Not standardized: borates

Risk Scenario B
Description: outdoor, human contact likely, water contact likely
Examples: piers or walkways over water or wetlands or situated where runoff may be significant.
A distinction must be made for members that are actually standing in the water versus those that are merely above the water or near the water. For members in the water, refer to Risk Scenario C below. This category appears to correspond to AWPA use category UC4A. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above. Cu8 is not standardized for this use category. Copper-containing preservatives are not preferred for this use, but if used should be chosen on basis of minimum copper leaching (e.g. ACQ).
Acceptable: Non wood materials, rot resistant woods, plastic-coated lumber (ACQ, CBA, or CC), AAC, ZnN.
Not standardized: Cu8 and CDDC for posts; Cu8 for sawn lumber

Risk Scenario C
Description: outdoor, human contact unlikely, immersed in water
Examples: pilings
This scenario encompasses several distinct AWPA use categories, each with different standards, so each will be considered separately below.

Pilings and piers, fresh water
AWPA use category UC4C has standards only for penta, creosote, CuN, CCA, ACA, ACZA. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above. This leaves CuN as the only acceptable wood treatment. Other copper-based materials would be acceptable if plastic coated.
Acceptable: non-wood materials such as metal, plastic, plastic-coated lumber, or concrete; CuN.
Not standardized: Cu8, ACC, ACQ, CC, CBA, CDDC, borates

Pilings and piers, salt water
AWPA use category UC5A/B has standards only for creosote, CCA, ACA, ACZA, and CC (sawn lumber only). (PCP is not effective in salt water exposure.) PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above. This leaves only CC, which is standardized only for sawn lumber. Other copper-based materials would be acceptable if plastic coated.

Acceptable: non-wood materials such as metal, plastic, plastic-coated lumber, or concrete; CC (sawn lumber only)
Not standardized: penta, Cu8, CuN, ACC, ACQ, CBA, borates, CDDC

Risk Scenario D
Description: outdoor, ground contact, human contact likely, water contact unlikely
Example: utility poles sited in soil
The AWPA distinguishes between low, medium, and high decay potential situations. Although the same materials have standards, the preservative retentions vary in some cases. Standards exist for creosote, PCP, CuN, CCA, ACA, ACZA, and ACQ-B. PCP, creosote, and arsenicals, are eliminated for all uses as described above.
Acceptable: non-wood (steel, fiberglass, concrete), CuN or ACQ.
Not standardized: Cu8, ACC, CC, ACQ-D, CBA, CDDC, borates

Risk Scenario E
Description: outdoor, ground contact, human contact likely, water contact likely
Example: utility poles sited on impervious surface with risk of runoff
The AWPA distinguishes between low, medium, and high decay potential situations. Although the same materials have standards, the preservative retentions vary in some cases. Standards exist for creosote, PCP, CuN, CCA, ACA, ACZA, and ACQ-B. PCP, creosote, and arsenicals, are eliminated for all uses as described above. CuN is preferred over ACQ where runoff to surface water may occur because CuN contains much less copper. Copper naphthenate may soon be available as a butt treatment for utility poles (Combs 2001), greatly reducing the amount of copper available for weathering. Butt treatment can be used on cedar poles, where the above ground portion of the pole has natural rot resistance.
Acceptable: non-wood (steel, fiberglass, concrete), CuN (butt treatment preferred) or ACQ.
Not standardized: Cu8, ACC, CC, ACQ-D, CBA, CDDC, borates

Risk Scenario F
Description: indoor, human contact unlikely, inhalation exposure possible, water contact unlikely
Examples: building framing or foundations, plywood
This risk scenario includes several distinct AWPA use categories. Some preservatives are not standardized for certain uses, particularly ground contact. In addition, PCP and creosote are not recommended by EPA for indoor residential use except that PCP is allowed for ground contact. CuN and ZnN are not labeled for indoor uses.

Building framing or plywood (interior, above ground, dry), use category UC1
All materials are standardized. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above. All other preservatives except borates are unnecessary in this application. Borates are acceptable and may help avoid the need for insect treatments in the future.
Acceptable: untreated wood, borates
Not standardized: none

Building framing (interior, ground contact), use category UC4B
The following materials are not standardized: Cu8, ACC, CC, ACQ-D, borates, CDDC. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above.
Acceptable: ACQ-B, CBA,
Not standardized: Cu8, ACC, CC, ACQ-D, borates, CDDC

Plywood (interior, above ground, damp), use category UC2
ACQ-B, CDDC, and borates are not standardized by AWPA. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above.
Acceptable: Cu8, ACC, ACQ-D, CC, CBA
Not standardized: ACQ-B, CDDC, borates

Plywood (exterior, above ground), use category UC3B
PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above. ACQ-B and borates are not recommended by AWPA.
Acceptable: Cu8, ACC, ACQ-D, CC, CBA
Not standardized: ACQ-B, borates

Plywood (exterior, ground contact) use category UC4A
The following treatments are not standardized: Cu8, CuN, CC, borates, CDDC. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above.
Acceptable: ACC, ACQ, CBA,
Not standardized: Cu8, CuN, CC, borates, CDDC

Plywood (exterior, ground contact, foundations), use category UC4B
The following treatments are not standardized: Cu8, CuN, ACC, ACQ, CC, CBA, borates. PCP, creosote, arsenicals, and CDDC are eliminated for all uses as described above.
Acceptable : none. The use of wood foundations is discouraged.
Not standardized: Cu8, CuN, ACC, ACQ, CC, CBA, borates

Summary

The primary wood treatments have been reviewed for their toxicity and other hazards. It is recognized that a distinction must be made between the wood preservative itself and the treated wood. However, all studies reviewed indicated that preservative chemicals do leach from treated wood and are picked up on hands from contact with the wood. Thus, the same health effects associated with the chemicals can also be caused by contact with the wood or contaminated environmental media such as soil or water.

The primary human health concerns are associated with PCP, creosote, and arsenical preservatives. All contain carcinogens, and some risk assessments have identified unacceptably high risk levels for certain exposure scenarios. In addition, PCP is contaminated with several highly toxic compounds, including dioxins.

Copper is the treatment most toxic to aquatic organisms, and copper levels are already an important issue in parts of San Francisco Bay. Although the amount of copper (or other chemicals) that leach from wood structures in or around water may in many cases be less than that expected to impact aquatic life, the same may not be true when background levels of these and other chemicals or other stressors are included. The prudent course is to minimize the use of copper in aquatic environments or where runoff is expected to occur.

PCP, some components of creosote, and some contaminants of PCP display the characteristics of persistence, bioaccumulation, and toxicity that have identified these materials as PBTs by some agency criteria. Metals such as arsenic, copper, chromium, and zinc are not considered PBTs because they do not bioaccumulate.

Some types of treated wood appear to qualify as hazardous waste in California and if discarded (except by utilities) would not legally be allowed in municipal landfills. Wood treated with arsenic is the most likely to fail state standards, but some copper treated wood may also be a disposal concern. This issues deserves more study.

Based on the information presented in this report and in consultation with the San Francisco Department of the Environment, a set of nine selection criteria were proposed for identifying acceptable wood treatments:

1. If a pressure treated product, treatment must be standardized by AWPA for the intended use. This requirement helps ensure that the treatment meets specifications to minimize leaching.
2. Product must not be used in ways that EPA prohibits or discourages.
3. Product or use must not violate state or local law, policy, or published best management practices.
4. Product may not be contaminated with dioxins.
5. Product, constituents, or contaminants may not be listed on the EPA Priority PBT list or the EPA Waste Minimization Priority Chemicals list.
6. Product (or components) should not contain known, likely, or probable human carcinogens listed by EPA, IARC, NTP, or State of California.

7. Product (or components) should not be listed as reproductive or developmental toxicants by the State of California.
8. For structures built in or over water, or where significant runoff is likely to occur, the use of copper should be minimized. If copper-based products are used, products with the lowest leaching potential should be chosen.
9. Material must not designate as a hazardous waste using criteria set by the State of California.

When applied to the wood treatments for which AWPA standards exits, these criteria can select the acceptable treatments, as shown in Table 21 below.

Table 21. Summary of Acceptable Materials by Use

Description of Use	**Acceptable Materials**
Decks, railings, stairways, tables, benches, playground equipment, garden structures	Recycled plastic, untreated wood, painted wood, Cu8, CuN, ACC, AAC, ACQ, CC, ZnN, CBA
Piers or walkways over water or wetlands or where runoff may be significant	Recycled plastic, untreated wood, painted wood, AAC, ZnN, or plastic-coated wood. Copper-containing preservatives are not preferred for this use, but if used should be chosen on basis of minimum copper leaching (e.g. ACQ).
Pilings/piers fresh water	Metal, plastic, plastic-coated wood,concrete; CuN
Pilings/piers salt water	Metal, plastic, plastic-coated wood, concrete; CC (sawn lumber only)
Utility poles (in soil)	Metal, fiberglass, concrete; CuN, ACQ
Utility poles (in impervious surface)	Metal, fiberglass, concrete; CuN (butt treatment preferred)
Building framing, interior, above ground, dry	Untreated wood, borates
Building framing, interior, ground contact	ACQ-B, CBA
Plywood, interior, above ground, damp	Cu8, ACC, ACQ-D, CC, CBA
Plywood, exterior, above ground	Cu8, ACC, ACQ-D, CC, CBA
Plywood, exterior, ground contact	ACC, ACQ, CBA
Plywood, exterior, ground contact, foundations	None. Use of wood discouraged for foundations.

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Appendix 1
Pressure Treatments for which AWPA Standards Exist

Application	Use description	Category	Creosote	Penta	Cu
landscape stairs (steps, risers); fence pickets;	exterior, above ground, uncoated	UC3B	5-10 (14 species, most 8.0)	.25-.40 (12 species, most .40)	.02 spe
railings, outdoor benches and tables, playground equipment	exterior, above ground, uncoated, with significant hand contact	UC3B	Note 1	Note 1	.02 spe
decking planks	exterior, above ground, uncoated	UC3B	Note 4	Note 4	.02 spe
landscape stairs (posts), fence posts, decking support posts, outdoor benches and tables (legs only), playground equipment (posts only)	exterior, ground contact, sawn products	UC4A	6-10 (12-13 species, most 10.0)	.3-.5 (11 species)	NR
landscape stairs (posts), fence posts, decking support posts, outdoor benches and tables (legs only), playground equipment (posts only)	exterior, ground contact, posts	UC4A	6-10 (5-8 species)	.40 (8 species)	
building framing (lumber)	interior, above ground, dry	UC1	Note 3	Note 3	.02 spe
building framing (ground contact)	interior, ground contact, structural	UC4B	Note 3	Note 2	
plywood	interior, above ground, dry	UC1	Note 3	Note 3	
	interior, above ground, damp	UC2	Note 3	Note 3	
	exterior, above ground	UC3B	8	0.4	
	exterior, ground contact	UC4A	10	0.5	NR
	exterior, ground contact, foundations	UC4B	12	0.6	NR

pilings and piers (fresh water)		UC4C	6-17 (9 species)	.30-.85 (9 species)
pilings and piers (salt water)	piles (single treatment)	UC5A/B	16/20 SP,DF	
	sawn material (single treatment)	UC5A/B	25	
wood utility poles (low decay potential)		UC4A	4.5-20 (10 species)	.23-1.0 (10 species)
wood utility poles (Mod decay potential)		UC4B	4.5-20 (10 species)	.23-1.0 (10 species)
wood utility poles (High decay potential)				

Key to uses:
AWPA standard (pcf)
Special cautions apply, see notes
not recommended (EPA consumer info sheet)
not recommended (AWPA)

Notes:
1. Allowed if sealed to prevent skin contact
2. Not allowed for residential interior use except beams in ground contact
3. Not allowed for residential interior use
4 Allowed if clean and free of residue

"Louie, Jeannie"
<Jeannie.Louie@sfdpw.org>
06/17/2005 01:00 PM

To "Chien, Richard" <Richard.Chien@sfgov.org>
cc "Kawamura, Ben" <Ben.Kawamura@sfgov.org>, "Ward, Mike" <Mike.Ward@sfgov.org>
bcc
Subject RE: Report on Arsenic Ordinance

Richard,

Per our conversation, here is some information regarding the Lumber & Plywood City Term Contracts.

Present Contracts: 76350 and 76350B

Both above contracts went out to bid back in October 1998 for a 2 year term ending September 30,2000. Tropical Hardwood clauses were included in the contracts, but not Section 1303 since it did not become an ordinance until 2003. In the original bid for 76350B, on some of the lumber bid items, there was a line item to bid on pressure treated wood with CCA4. Evidently, the City did not receive any bids offering the CCA4 treatment and the City did not make any awards on those particular items.

The above two contracts have been on a month-to-month- since September 2000. I recently inherited this contract and am working on a survey to compile information from the end users and will bid the Lumber and Plywood Contract as soon as I can.

There are presently 3 vendors providing lumber and plywood under the present contracts: Van Arsdale-Harris Lumber Company, Plywood & Lumber Sales, and Beronio Lumber. I spoke with the reps from Van Arsdale and Plywood & Lumber yesterday and they told me that they do no sell any pressure treated wood products to the City and other customers. I spoke with Beronio's rep and was told that Beronio had not sold wood with CCA4 for 5-6 years, but does sell the acceptable alternative wood treated with CBA-A to the City.

Richard,

I hope this information helps and if you need additional information regarding the City Lumber & Plywood Contracts, please let me know.

Thanks.

Jeannie Louie
Senior Purchaser
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-----Original Message-----
From: Chien, Richard
Sent: Thursday, June 16, 2005 10:44 AM
To: Louie, Jeannie
Subject: Report on Arsenic Ordinance

Hi Jeannie,

Department of Environment is preparing a report to our Commission and to Board of Supervisors regarding the progress of the arsenic wood ordinance. Our next commission meeting is July 26.

The process will be as follows:

SFE to prepare report on the progress, with updates from other City departments (Rec/Park, Port, OCA) per ordinance requirements.
SFE to present this report to the Commission on the Environment on July 26.
SFE to send copy of report to clerk of BOS.
Clerk to notify SFE if they want a presentation or discussion before the BOS (they probably will not).

I am asking for your help in putting this report together. As you know, the ordinance sections that apply to OCA relate to the purchase of wood products containing preservatives. Applicable ordinance language is copied below, and relevant issues/questions are in bold.

SEC. 1303. PURCHASE OF ALTERNATIVES.

Except as provided in this Section, after June 30, 2003, each City Department entering into a new Contract or extending the term of an existing Contract for the purchase of preservative-treated wood products, and each Contractor purchasing preservative-treated wood products on behalf of the City, shall only purchase such products from the list of alternatives adopted by the Department pursuant to Section 1302 of this Chapter. A City Department or Contractor that purchases preservative-treated wood containing arsenic for saltwater immersion shall be exempt from this Section. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.4; added by Ord. 15-03, File No. 021791, App. 2/7/2003)

If you could, please provide a brief (1 page max.) narrative that addresses the issues outlined above.

Please send any supporting attachments if applicable (e.g. sample lumber and wood product specification language containing non-CCA provision, list of vendors and confirmation that they do supply CCA-treated wood).

I will need your narrative by Tuesday, July 19.

Please contact me with any questions you may have, and thank you in advance for your assistance on this.

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Gavin Newsom, Mayor

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Yomi Agunbiade, Acting General Manager

Update on RPD Pressure Treated Lumber Management Program

June 17, 2005

RPD completed an inventory of all RPD's wood play structures in October 2003. Through testing and research, our playgrounds were found to contain (34) play structures that had been constructed from wood treated with preservatives that contain arsenic. Since the completion of the inventory, 2 play structures have been removed, and another 5 have been replaced. As part of the Capital Plan, a total of 12 arsenic treated play structures will be removed over the next several years, leaving 22 more for future replacement. A time line does not exist for the replacement of the remaining play structures because replacement is contingent upon funding. If future Open Space Fund dollars are the only source of funds for play structure replacement, and all of the open space dollars are allocated exclusively to play structure replacement, then it will take approximately 11 years to replace the remaining play structures that are treated with preservatives containing arsenic. The allocation of Open Space Funds is subject to RPD's budget conditions and to political pressures.

The RPD completed a written pressure treated management program in July 2003. It was revised at the end of 2004 to include a summary of annual progress, and goals for the subsequent fiscal year. The Arsenic Guidance Document is an appendix to the Program report. It explains in scientific language the protocols for the testing phase. Testing, sealing, and posting schedules and text can also be found in the appendices of the program doument.

As part of the play structure testing program, RPD benches and picnic tables located within the general vicinity of play areas, were tested for arsenic. SCA Enironmental performed XRF testing at 23 different park sites, containing a total of 136 benches. None of the tested benches contained arsenic. SCA conducted similar testing of picnic tables at 7 park sites with 29 picnic tables. Again none of the tested picnic tables contained arsenic. This testing information verified the anecdotal information provided by staff and manufacturers. The wood members on picnic tables and benches are replaced frequently. RPD Structural Maintenance Yard has not stocked or used pressure treated lumber in more than a decade. Prior to 1993, they report that pressure treated lumber was never used for bench tops, picnic table tops or benches. Pressure treated lumber was used only in applications with ground contact.

Besides benches and picnic tables, RPD properties contain a number of wood retaining walls, stair treads, bridges, boardwalks, bollards and fence posts that may contain CCA treated lumber. None of these applications are likely to result in frequent hand to mouth contact.

Pressure Treated Lumber Management Plan

Prepared by:
Capital Improvement Division
San Francisco Recreation and Park Department
City & County of San Francisco

June 30, 2003
Rev. December 2004

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A. PURPOSE

The purpose of this program is to minimize childhood arsenic poisoning at Recreation and Park Department (RPD) playgrounds through the identification, management and abatement of chromated copper arsenate (CCA) treated lumber. The details of the program have been developed to comply with the Board of Supervisor's Ordinance 15-03 regarding lumber pressure treated with arsenic.

RPD manages 217 sites extending over 3100 acres within the City of San Francisco. These sites include parks, playgrounds, recreation centers, and clubhouses. It is beyond the department's current resources to identify all CCA treated lumber that may exist in San Francisco's park system. Instead, we have directed our efforts towards the identification, management, and abatement of CCA treated lumber where frequent contact with human skin is likely such as play structures, benches and picnic tables.

B. FISCAL YEAR 2003/2004 PROGRESS REPORT

1. Testing

RPD completed the play structure testing program during fiscal year 2003/2004. RPD tested eighteen structures during the year.

2. Play Structure Closures/Removals

As part of RPD's Capital Program, RPD removed two play structures, one at Holly Playground and the other at Rochambeau Playground. The play structures at Hyde Vallejo Minipark and Broadway Tunnel West Minipark were converted into planting areas, thus preventing access to remaining arsenic treated wood.

3. Sealing Program

At the start of the fiscal year, there were thirty-four play structures managed by RPD's ongoing sealing program. Four of those were either closed or removed during the fiscal year. See Appendix D for the monthly sealing schedule. RPD sealed a total of eighteen play structures during the fiscal year. Thirteen structures were scheduled for sealing during the fiscal year. Of these thirteen, RPD's Structural Maintenance Yard sealed ten play structures during the fiscal year. Seven of the thirteen play structures were sealed on or before schedule. The remaining six play structures lagged behind schedule between three and seven months. In addition to the thirteen scheduled play structures, another five play structures from the 2002/2003 schedule were sealed.

Play Structures Scheduled for Sealing 2003/2004

1. McLaren Park, Shelley
2. Hayes Valley
3. GGP @ Carousel
4. *North Beach, East PG*
5. JP Murphy PG
6. *Mission Dolores Park*
7. McLaren Park, Burrows
8. Christopher, north PG
9. Christopher, south PG
10. *Richmond PG*
11. Merced Heights PG
12. Little Hollywood Park
13. West Sunset PG

Note: Italicized playgrounds were not sealed during 2003/2004.

4. Play Structures Scheduled for 2002/2003, Sealed in 2003/2004

1. Joseph Lee RC
2. Broadway Tunnel West MP
3. Potrero Hill RC, North PG
4. Rossi PG
5. Washington Square PG

C. 2004/2005 PROGRAM GOALS

1. Play Structure Closures/Removals
Three play structures will be removed in 2004/2005. Following the removals, twenty-seven play structures will continue to be sealed as part of the sealing program.
Walter Haas PG
Little Hollywood PG
Eureka Valley PG

2. Play Structures Scheduled for Sealing 2004/2005

1. *Cayuga Lamaratine PG*
2. *North Beach East*
3. *Mission Dolores Park*
4. *Richmond*
5. Lincoln Park
6. Panhandle
7. Golden Gate Heights
8. Sunnyside PG
9. Upper Noe Valley RC
10. Glen Park RC
11. Hilltop Park
12. GGP @ Caroussel
13. McLaren Park, Shelley
14. St. Mary's RC
15. Walter Haas

3. Signage Program
In 2004/2005, RPD will initiate a sign program to install permanent signs at all play structures containing arsenic treated wood. The text of the sign is under development. One aluminum, graffitti resistant sign will be posted at fourteen playgrounds

Play Structures Scheduled for Sign Installation 2004/2005

1. Joseph Lee RC
2. Hilltop Park
3. Glen Park
4. Cayuga Lamartine MP
5. North Beach East PG
6. Hayes Valley
7. Mission Dolores Park
8. Alice Chalmers PG
9. Panhandle
10. JP Murphy PG
11. Christopher, north PG
12. Christopher, south PG
13. McLaren Park, Shelley
14. McLaren Park, Burrows

D. BACKGROUND

The Recreation and Park Department is currently implementing a capital improvement plan. (See Appendix H) Funds for the plan are derived from Proposition A, the $110 million Neighborhood Park Bond, and Proposition C, a continuation of the Open Space Fund established in City Charter Section 16.107. The Capital Plan outlines a program of renovations and improvements to 440 facilities. The Capital Plan is updated once per year. The information generated by the Pressure Treated Lumber Management Plan will be used to prioritize projects in the annual Capital Plan Update.
The need for a pressure treated lumber management plan emerged in June of 2001, when testing at Helen Wills Playground revealed high arsenic levels on the surface of the play structure and in

both the surrounding sand and soil. Lacking conclusive assessment guidelines from Department of Public Health, RPD decided to close the playground in July of 2001. Later, the Department of Public Health conducted a risk assessment of conditions at Helen Wills Playground. The assessment concluded that there was no health risk from the sand at the playground and that the risk associated with touching the play structure was unknown.

As a starting point for the development of this plan, RPD looked to federal, state and local studies, guidelines and regulations pertaining to arsenic treated lumber.

1. Consumer Product Safety Commission (CPSC) Risk Assessment
   In 2003, the CPSC published a risk assessment for exposure to CCA treated play structures. They found that the increased lifetime risk of developing lung or bladder cancer from exposure to arsenic during early childhood ranges from about 2 in a million to 100 in a million. The range in risk results from variables such as the number of days a child plays on the CCA-treated playset each year; the number of years they play on the CCA-treated play set; the amount of arsenic that is picked up on their hands while they play; and the amount of arsenic they ingest from their hands throughout the day. The CPSC's risk assessment was published in the wake of the EPA's announcement in 2002 that CCA-treated lumber would be voluntarily phased out of production by the end of 2003. The EPA's risk assessment is anticipated in 2005.

2. California State Requirements
   As of this time, the State of California has the only existing regulation governing the installation and maintenance of treated wood products. In 1987, the California Department of Health Services (DHS) issued a report titled "Report to the Legislature: Evaluation of Hazards Posed by the Use of Wood Preservatives on Playground Equipment". At that time, DHS concluded that CCA-treated wood did not pose an unacceptable hazard to children playing on the wood. They recommended nonetheless, that a non-toxic, non-slippery sealant be applied every two years to the treated wood. Note that both pentachlorophenol and creosote were also evaluated in this report, and DHS recommended discontinuing their use entirely. Subsequently, the California State Legislature adopted Health and Safety Code Section 115775. Some of the relevant requirements are as follows:

   - No state funds shall be used by a city/county to purchase wooden playground/recreational equipment that has been treated with 1) pentachlorophenol, 2) creosote, or 3) arsenic.
   - Arsenic treated wood may be used if it has been sealed and the seller certifies compliance with commodity standard C-17 as adopted by the American Wood Preservers Association.
   - Existing wood that has been treated with any of the substances listed above must be sealed every two years.

3. Other National Guidelines
   There are several national guidelines, but which do not provide specific guidance pertaining to the issues relevant to RPD. They include:

   - "Handbook for Public Playground Safety" by the U.S. Consumer Product Safety Commission (CPSC). This document recommends that several preservatives other than CCA not be used. It also states that CCA treated wood is acceptable as long as it meets the specifications set forth in Standard C-17 as adopted by the American Wood Preservers Association. It provides little other guidance.
   - "Standard Consumer Safety Performance Specification for Playground Equipment for Public Use", ASTM F 1487-98. This is the document on which much of the CPSC guideline is based, and provides specific direction for installation of playground equipment. Little mention is made of wood preservatives other than certain preservatives shall not be used, and that others shall be treated. Specific guidance is not provided.

4. San Francisco Preservative treated Wood Containing Arsenic Ordinance
In January 2003, The San Francisco Board of Supervisors adopted Ordinance 15-03, Preservative treated Wood Containing Arsenic which required city departments to take specific measures to identify and manage arsenic treated lumber that could potentially pose a hazard to San Francisco children. The language of the ordinance stipulates that each city department "...develop a written management program for preservative treated wood containing arsenic including best management practices, schedules and protocols for testing for leaching arsenic and chromium, sealing and posting of warning language where contact with human skin is likely..."

E. IDENTIFICATION OF RPD ARSENIC TREATED WOOD

Prior to the ban on arsenic treated lumber, RPD installed premanufactured play equipment and site furniture throughout the park system. Pressure treated lumber was purchased either by RPD or by RPD employed contractors to construct exterior structures such as boardwalks, decks, handrails, piers, retaining walls, fence posts, and stair treads.
Although it is beyond the resources of the department to identify and inventory every piece of lumber found on RPD property, RPD investigated structures with which children are likely to have hand to mouth contact, including play equipment, picnic tables and benches.

1. Play Structure Inventory
RPD has over 200 facilities with '143' play structures; some playgrounds have more than one play structure for children 2 to 12 years old. Although many wood play structures have been replaced with metal or plastic play structures, a large number of wood models still remain. In the Spring of 2003, RPD set out to identify all CCA treated play structures on RPD properties. RPD used three sources of information to determine how many of the 143 play structures contain arsenic.

- Visual Inspection
RPD staff performed a visual inspection of all RPD play structures. RPD employees visually inspected all RPD play structures to distinguish between plastic or metal structures and wood structures. Ninety-one wood play structures were found. (Appendix A – RPD Wood Play Structure Inventory)
- Research
RPD staff conducted product research on play structures. One play structure manufacturer, Columbia Cascade, provided documents confirming that the company had not used CCA treated lumber to fabricate their play structures. Further research determined that RPD has installed identified 6 Columbia Cascade structures.
- Testing
An environmental consultant tested the RPD wood play structures according to the protocols established in the Arsenic Guidance Document which is discussed in greater detail later in this section. RPD tested all the wood play structures not fabricated by Columbia Cascade between May of 2003 and October 2003. (Appendix B - Wood Play Structure Testing Schedule) In tandem with RPD's testing program, the Department of Public Works also tested isolated play structures as part of site assessment activities related to park and play ground construction. As part of the program, RPD tested 79 play structures. Thirty two play structures were found to contain arsenic. This number excludes Rochambeau Playground and Holly Playground which were not part of the testing program because DPW tested the Playground prior to the start of the testing program. Including Rochambeau and Holly Playgrounds, RPD had thirty four play structures containing arsenic treated wood at the start of fiscal year 2003/2004.

2. Arsenic Guidance Document
The Recreation and Park Department Pressure Treated Lumber Management Program was developed to identify and manage arsenic treated lumber on RPD sites. The program involves first hazard identification, then hazard management and subsequent hazard abatement. By providing protocols for sampling and reporting, the "Arsenic Guidance Document" is the first component of our structured program to systematically test existing pressure treated lumber. It was developed specifically for the Recreation & Park Department with the explicit goal of responsibly managing test result information with the limited resources available. Independent of the "Arsenic Guidance Document", the State of California mandates that all play structures suspected to contain arsenic be sealed every two years. RPD has a plan to seal all arsenic treated play structures per this requirement. As a supplement to the State of California's requirements, the "Arsenic Guidance Document" prioritizes action given a gradation of test results. The decision tree in the Arsenic Guidance Document creates a nuanced response system by assigning priority codes to defined test results. The priority codes do not supercede the State's mandate. (See Appendix G – Arsenic Guidance Document)

3. Play Equipment Inventory
RPD does not maintain a database of existing park equipment. Thousands of benches and picnic tables exist on Recreation & Park Department sites. Because it simply not within the financial means of the Recreation & Park Department to locate and test each of these structures, RPD's plan to inventory these structures includes the following actions:

   - Review RPD practices in the installation and maintenance of park equipment
   - Test a representative sampling of park equipment to corroborate the practices established above resulted in CCA-free park equipment.

4. RPD Fabrication and Maintenance Practices
RPD Structural Maintenance Yard reports that RPD has not installed any CCA treated lumber at RPD facilities since 1993. In 1993, RPD's standard lumber vendor stopped stocking CCA treated lumber. Any bench or picnic table constructed by RPD in recent years, therefore does not contain arsenic. Similarly, RPD did not use CCA treated lumber to repair any prefabricated bench or picnic table in the past decade. Although RPD does not have records to confirm the number of benches and picnic tables that have been repaired since 1993, the Structural Maintenance Yard reports that picnic tables and benches receive frequent maintenance because they are subject to significant abuse via weather and vandalism.
Prior to 1993, Structural Maintenance reports that CCA treated lumber was never used to fabricate RPD benches. Fir was the material of choice for the horizontals of both benches and picnic tables. CBA treated lumber was used by the Carpentry Shop to fabricate the structural supports for picnic tables.

5. Park Equipment Testing
The historic information about benches and picnic tables provided one data point about the extent of CCA treated park equipment. As part of RPD's plan to inventory park equipment, RPD sought to verify the anecdotal information provided by staff and manufacturers by testing benches and picnic tables. Aspart of the play structure testing program, benches and picnic tables located within the general vicinity of play areas, were tested for arsenic. SCA Enironmental performed XRF testing at 23 different park sites, containing a total of 136 benches. None of the tested benches contained arsenic. SCA conducted similar testing of picnic tables at 7 park sites with 29 picnic tables. Again none of the tested picnic tables contained arsenic.
Besides benches and picnic tables, there are a number of wood retaining walls, stair treads, bridges, boardwalks, bollards and fence posts that may contain CCA treated lumber. None of these applications are likely to result in frequent hand to mouth contact.

F. REPLACEMENT OF ARSENIC TREATED PLAY STRUCTURES

1. Available Funding

The discovery of arsenic entails an ongoing commitment to the management of the potential hazard via sealing. An alternative to sealing is the removal and replacement of the play structure with a new one. The department currently has funding to renovate a limited number of play structures through funding from Proposition A and Proposition C. The expenditure of Neighborhood Park Bond funds is outlined in the Capital Plan, a document that reflects both community and departmental priorities. Although it may be a departmental priority to replace arsenic treated play structures, the fiscal ramifications of that decision must be balanced with other community concerns.

2. Cost Analysis

The total cost of abating an arsenic treated play structure is the sum of the demolition and disposal costs of the existing play structure plus the labor and materials for the installation of a new play structure.

Cost per Play Structure	
Hard Costs	
Demolition cost to remove and dump play structure	$ 45,000
Play structure cost including related improvements	$500,000
Contingency	$ 54,500
Soft Costs	
Design, Contract Prep and Construction Administration	$149,875
Total per structure	$749,375
Total cost to replace (29) play structures	**$21,731,875**

3. Timeline for Replacement

The projects addressed by the Capital Plan will be implemented in three phases. Funding currently exists for the first phase of projects. Phase one of the Capital Plan will be complete in approximately three years. The following play structures have already been or will be replaced during phase one of the Capital Plan:

1. Holly PG
2. Rochambeau PG
3. Walter Haas PG
4. Joseph Lee RC PG
5. West Sunset PG
6. Rossi PG
7. Chinese RC PG
8. Little Hollywood
9. St. Mary's RC PG
10. Sunnyside PG
11. Upper Noe Valley RC
12. GGP Children's PG

The remaining arsenic treated wood play structures will be replaced as part of the last two phases of the Capital Plan. These projects will be developed and implemented as funding becomes available. Projects in phase one and two will be prioritized with community input, using a number of criteria. One of those criteria is the presence of hazardous materials.

G. PRESSURE TREATED LUMBER MANAGEMENT PROGRAM

1. Sealing Effectiveness Study

In June of 2002, RPD decided that the effectiveness of the periodic sealing should be investigated to confirm that the sealing methodology, material and frequency effectively prevents the dislodgement of surface arsenic per the State of California's recommendations. It was hypothesized that variables such as climate, age of the wood and the sealant product could theoretically change the effectiveness of RPD's sealing efforts. The Sealing Effectiveness Study

began in August of 2002 with the testing of five representative play structures. RPD selected five representative play structures for testing as part of the pilot project. The five sites were chosen to maximize age and geographic diversity. The (5) test sites included Panhandle Playground (1999), Buena Vista Playground (1991), St. Mary's Recreation Center (1986), Chinese Recreation Center (1980), and Hunter's Point Recreation Center (1975).
Prior to sealing, RPD tested the play structures for arsenic and chromium according to the protocols outlined in the draft version of the "Arsenic Guidance Document". Arsenic was found at Panhandle Playground, St. Mary's RC, and Chinese RC. Chromium (VI) was not found at any of the sites. The three play structures containing arsenic were sealed, and then tested at regular intervals thereafter. The primary goal of the testing was to evaluate the long-term effectiveness of sealing the treated wood in order to prevent arsenic leaching. Other goals of the study included:

- To gauge the effectiveness of the "Arsenic Guidance Document" by SCA Environmental, and to determine whether modifications are needed in the sampling and reporting protocol.
- To evaluate the testing protocol and usefulness of sampling for Chromium (VI) in the play structures and the surrounding play sand.

After the initial testing of the five representative play structures, SCA Environmental modified "Arsenic Guidance Document: Arsenic in Play structure Response Ranking System" to streamline sampling and reporting protocols for the play structure testing program. SCA Environmental also developed a reporting form to concisely communicate the test results. The test results for the successive testing of the three play structures that contained arsenic treated wood can be found in the Test Result Summary.

Chinese Recreation Center

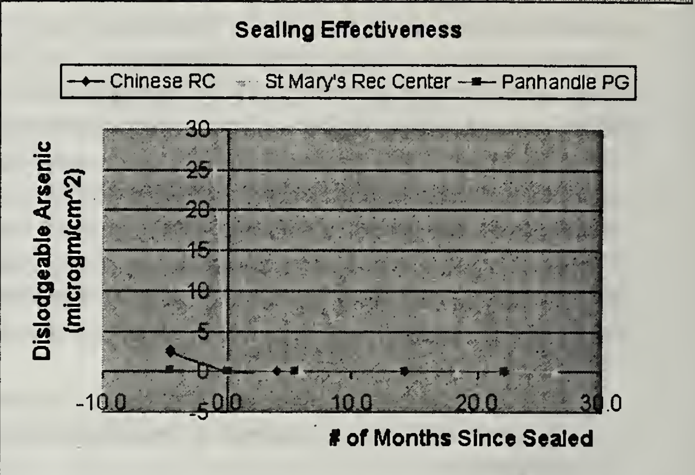
Panhandle Playground

Hunter's Point Recreation Center

St. Mary's Recreation Center

Test Result Summary

Site	TestDate	# months since sealing		As (microgm/cm^2)
Chinese RC	8/22/02	-4.6		2.7
Chinese RC	8/22/02	-4.6		2.4
Chinese RC	1/7/03	0.0		0.043
Chinese RC	5/9/03	4.1		0.031
Chinese RC	3/12/04	14.3		0.12
Chinese RC	11/1/04	22.1		0.045
St Mary's Rec Center	8/1/02	-1.1		25
St Mary's Rec Center	9/3/02	0.0		0.005
St Mary's Rec Center	9/3/02	0.0		0.02
St Mary's Rec Center	9/3/02	0.0		0.003
St Mary's Rec Center	2/28/03	5.9		0.2
St Mary's Rec Center	2/28/03	5.9		0.04
St Mary's Rec Center	2/28/03	5.9		0.09
St Mary's Rec Center	3/12/04	18.5		0.082
St Mary's Rec Center	11/1/04	26.3		0.035
Panhandle PG	8/22/02	-4.6		0.3
Panhandle PG	1/7/03	0.0		0.11
Panhandle PG	6/19/03	5.4		0.035
Panhandle PG	3/12/04	14.3		0.014
Panhandle PG	11/1/04	22.1	<	0.055



After the first round of testing in the Sealing Effectiveness Study, RPD's consultant made the following recommendations:

- Test all play structures independent of age because there does not appear to be a correlation between the age of a play structure and the presence of arsenic.
- Perform wipe sampling only on play structures that have an XRF reading greater than 200 micrograms/square centimeter.
- Test for arsenic leaching at a distance of 1'-0" away from the edge of a wood post.
- Do not perform further testing for Chromium.

Although the quantitative test results from the sealing effectiveness study indicate that sealing is an effective means of controlling the leaching of arsenic, this data is largely anecdotal. The quantity of arsenic on the surface of the wood did not return to levels present prior to sealing, but the quantities did rise over time. Federal requirements for maximum allowable micrograms or arsenic per square centimeter of wood have not been established. Two years after sealing, the average level of dislodgeable arsenic was .045 micrograms/square cm.

2. Sealing Standards
Given the limited funds for immediate replacement of the existing play equipment and park structures, and the ongoing demand for play facilities within San Francisco, sealing wood treated with arsenic remains the only viable alternative. There is not yet conclusive data on the effectiveness of sealing methods and products. The Unites States Environmental Protection Agency in currently performing a study to compare the ability of various wood sealant to block leaching and contain arsenic. The study will be complete in 2005.
In the meantime, the Department of the Environment engaged Philip Dickey of the Washington Toxics Coalition to review existing scientific literature on wood sealants for CCA treated lumber. His paper entitled, "Identifying Effective Sealants for CCA-Treated Wood" makes the following recommendations regarding sealant type and use. All sealing operations conducted by RPD shall conform to these recommendations.

- Clear sealers, water repellents, and varnishes do not provide much durability and should generally be avoided as single treatment finishes.
- Acrylic, latex paint should be considered for fences, tables and other furniture that receive moderate to low war or are vertically oriented. They may also be appropriate for hand rails. Inspection should look for evidence of blistering, peeling or cracking.

- Semi-transparent deck stains should be used for deck surfaces and play structures.
- All coated items should receive inspections at a six-month interval to assess the need for retreatment. Horizontal surfaces can be expected to need retreatment most frequently, tilted surfaces next, and vertical surface least frequently.
- Follow manufacturer' instructions for best results. Surfaces should be clean, dry, and free of mildew. Lumber that has been very wet should be allowed to air dry for two to three weeks in dry weather before coating. Avoid finishing when rain is expected within 24 hours. If water-based products are used, do not apply if temperature will drop below 50 degrees during the 24 hours following application. Do not over apply product; follow label directions.

Additional protocols include:

- Sealing per the California State recommendations in Health and Safety Code, Section 115775.

3. Sealing Program

Prior to the initiation of the Sealing Program, RPD created standards to govern our response to the discovery that a RPD play structure contains arsenic treated lumber. These standards are applicable whenever a RPD site is tested for arsenic treated lumber.

Within 3 days of testing, the testing agency notifies RPD of the test results. The test results will be sent to the Recreation & Park Department Project Manager, OEHS, and the Structural Maintenance Paint Shop Supervisor.

Upon receipt of written notification that a tested play structure necessitates Priority 1 (P1) thru Priority 4 (P4) action, the procedures outlined in the "Arsenic Guidance Document" must be implemented within (10) working days from notification. Recommended actions are outlined on Page 9 of the "Arsenic Guidance Document." (See Appendix G – Arsenic Guidance Document)

Starting in November of 2001, the Capital Division began to monitor the department's play structure sealing efforts to ensure that RPD was in compliance with the State of California's regulations. The monitoring program became systematized in June of 2002. Without the benefit of test data, RPD assumed that all wood play structures contained CCA treated lumber, and all 96 structures needed to be sealed every two years. Since the completion of the testing program, the Structural Maintenance Yard has limited sealing effort to the thirty four play structures that contain arsenic treated lumber.

4. RPD Sealing & Reporting Protocol

- All sealing activities shall conform to Phil Dickey's Report referenced earlier in this document
- The preferred sealing product is: Woodpride 100% Acrylic Latex Siding Stain, ICI Sinclair, # 2600-0500. It should be applied per manufacturer's recommendations.
- The preferred sealant color is either brown or green to match existing paint colors.
- The program manager distributes to OHS and Structural Maintenance the new sealing schedule at the beginning of each fiscal year.
- The program manager calls the Paint Shop Supervisor once per month to check on sealing schedule progress. The program manager maintains a record of progress and distributes updates, if and when new information has been added.

5. Hazard Communication

Test Result Posting

Following the testing of a play structure a public notice is posted at the playground. RPD developed two notices. One notice informs the public that "no arsenic" exists at a given play structure. The second notice, posted at sites with a "positive test result", alerts the public of potential risks associated with arsenic exposure and informs childcare providers of measures to minimize any adverse effects associated with play on an arsenic containing play structure. Both notices inform the public of RPD's hazard management, testing and abatement program. The notices are posted in English and other languages as necessary. Notices have been translated intoother languages frequently spoken in San Francisco including Chinese, Spanish, Russian, Vietnamese and Tagalog. Following negative xrf test results, the "no arsenic" public notice is posted by the person performing the test at the time of testing. Following a positive test result, the RPD Paint Shop posts a "positive test result" after the play structure has been sealed. The positive notices are posted at each playground entry at eye level in all relevant languages. See Appendix F for the text of the public notices.

Arsenic-treated Play Structure Identification Signs

Permanent signs are necessary to alert play structure users and their guardians to the presence of a potential hazard, and the measures that they can take to minimize the risk of exposure. Posted signs should be fabricated from .080 gauge aluminum attached to a galvanized steel post.

Staff Notification

All maintenance and operations staff are informed of the test results from the play structure testing. They are asked to monitor the condition of lumber on an ongoing basis. Maintenance staff performing routine maintenance to pressure treated lumber should comply with recommendations in the Safe Work Practices Manual developed by EHS.

In many situations, staff will not know whether or not a wood structure contains arsenic. When handling wood suspected to contain arsenic treated lumber, staff are to assume that arsenic is present, and follow safe work practices determined by EHS.

6. Demolition

The Capital Division's demolition activities are overseen by the Department of Public Works, Bureau of Construction Management's Site Assessment and Remediation Division (SAR). They adhere to regulations determined by the California Department of Toxic Substances. SAR is responsible for performing initial investigations of hazardous materials, for hiring abatement contractors, and for monitoring adherence to the State of California regulations. Information regarding the State of California's regulations can be found in the Arsenic Guidance Document.

7. New Construction

Much of the effort of the pressure treated lumber management program has been guided by the mandate to responsibly manage existing pressure treated lumber play equipment and park structures. At the start of the program, pressure treated lumber was still readily available from lumber yards, and there was concern that new pressure treated lumber might be installed by contractors performing work for the City. The subsequent EPA action to phase out the use of arsenic pressure treated lumber means that RPD does not need to establish controls to monitor installed wood products. This conclusion is supported by several facts.

- Arsenic treated lumber is no longer available for purchase.
- RPD has a decade old policy not to purchase arsenic treated lumber.
- Play structure and park equipment manufacturers have stopped the use of arsenic treated lumber.

8. Approved List of Wood Play Structure & Park Equipment

Play Equipment Manufacturer	***Preservative***
Kompan Big Toys	*Copper Azol*
Play Nation Play Systems	*Alkaline Copper Quaternary (ACQ)*
Planet Playgrounds	*Alkaline Copper Quaternary (ACQ)*

Landscape Structures	*N/A. Have discontinued wood*
Columbia Cascade	*"MaxTreat" System,*
Game Time	*ACQ or Redwood w/ No Preservative*
Henderson, Inc.	*Alkaline Copper Quaternary (ACQ)*
Kidstruction	*ACQ or Redwood w/ No Preservative.*

Site Furniture Manufacturer	***Preservative***
Columbia Cascade	*"MaxTreat" System*
Du-mor	*Duck's Back wood sealant. No Preservative. Ipe, Redwood, White Oak.*
Thomas Steele	*Kiln dried wood, No Preservative.*
Landscape Forms	*No Preservative, kiln dried wood/-Ipe, Jarra, Redwood.*
Game Time	*ACQ or Redwood w/ No Preservative*
Henderson	*Alkaline Copper Quaternary (ACQ)*
Victor Stanley	*No preservatives, Mahogany or Ipe.*
Belson Outdoors	*Kiln dried hardwood/cedar, No Preservative*
Litchfield Industries	*No Preservative, Sherwood Homo-clad Sealer*
Recreation Creations	*No Preservatives or pressure treated wood*

9. Approved List of Wood Preservatives
Other wood preservatives may offer the longevity of arsenic treated lumber without the hazard. The San Francisco Department of the Environment is in the process of developing a list of acceptable wood preservatives. After the list has been published, RPD will only purchase wood treated with preservatives that appear on the list.

10. Safety Practices
RPD maintains a manual entitled "Safe Work Practices" which dictates safety precautions for the handling of potentially hazardous materials. Although the document has yet to be updated to incorporate safe work practices for the handling of pressure treated lumber, many, if not all of the recommendations pertaining to lead coatings are applicable to the handling of pressure treated lumber.

11. Program Management
A program manager will manage the Pressure-treated Lumber Management Program. The responsibilities of the program manager include: to set the annual goals for the program, to monitor the progress of the program, and to coordinate the activities of the program.

Program Monitoring

The program manager records any deviations to the sealing schedule and revises the sealing schedule, as necessary, to incorporate field conditions that may prevent immediate sealing and information obtained from the hazard identification portion of the program.

Program Communications

The program manager issues an annual report to communicate progress made in the prior fiscal year. The report includes progress made in the sealing, testing, and replacement of play structures; and sets goals for the following fiscal year. The report will also include a financial summary of expenditures related to the Pressure-treated Lumber Management Program.

Program Coordination

The program manager is responsible for the coordination of the various program activities and personnel, including:

- Review and approval of consultant scope of work for hazard identification and/or abatement.
- Coordination of the work schedules of in-house personnel and outside consultants and distribution of information to program personnel.
- Coordinate the work related to Capital Improvement projects with the Pressure-treated Lumber Management Program.

1. Appendix A: RPD Wood Play Structure Inventory, 2002

No.	District	Playground		No.	)istrict	Playground
1	1	10th Ave./Clement MP		47	6	Franklin Square
2	1	Argonne PG		48	7	Glen Park RC
3	1	Cabrillo PG		49	7	Golden Gate Heights
4	1	Fulton PG		50	7	Midtown Terrace PG
5	1	Lincoln Park		51	7	Miraloma PG
6	1	GGP @ Carousel		52	7	Murphy, J. P. PG
7	1	GGP, 46th Ave		53	7	Serra, Junipero PG
8	1	GGP, 19th Ave		54	7	Sunnyside PG
9	1	Panhandle PG		55	8	Holly PG
10	1	Richmond PG		56	8	Bernal Heights MP
11	1	Rochambeau PG		57	8	Christopher PG, North
12	1	Rossi PG		58	8	Christopher PG, South
13	2	Alta Plaza Park		59	8	Eureka Valley RC
14	2	Cow Hollow PG		60	8	Mission Dolores Park
15	2	Laurel Hill PG		61	8	Noe Valley Courts
16	2	Lafayette Park		62	8	Peixotto PG
17	2	Broadway Tunnel West MP		63	8	Walter Hass
18	2	Chinese PG		64	8	Upper Noe RC
19	3	Chinese RC		65	9	24th Street MP
20	3	Hyde/Vallejo MP		66	9	Coleridge MP
21	3	Mountain Lake Park		67	9	Garfield Square
22	3	North Beach PG, East		68	9	Juri Commons MP
23	3	North Beach PG, West		69	9	Precita Park
24	3	Portsmouth Sq., Upper		70	9	St. Mary's RC
25	3	Portsmouth Sq., Lower		71	10	Hilltop Park
26	3	Presidio Heights PG		72	10	Hunters' Point RC
27	3	Washington-Hyde MP		73	10	Joseph Lee RC
28	3	Washington Square		74	10	Kelloch/Velasco MP
29	3	Woh Hei Yuen		75	10	Little Hollywood Park
30	4	Larsen Park		76	10	McKinley Square
31	4	McCoppin Square		77	10	McClaren Park, Shelley Dr.
32	4	Parkside Square		78	10	McClaren Park, Burrows St.
33	4	Stern Grove		79	10	McClaren Park, La Grande Ave.
34	4	Sunset RC		80	10	Palega, Jr., Sululagi RC
35	4	West Sunset PG		81	10	Palou-Phelps MP
36	5	Buchanan St. Mall		82	10	Potrero Hill RC, east PG
37	5	Buena Vista Park		83	10	Poterero Hill RC, north PG
38	5	Grattan PG		84	10	Silver Terrace PG
39	5	Hamilton RC		85	11	Balboa Park
40	5	Hayes Valley		86	11	Brooks Park
41	5	Kimbell PG		87	11	Cayuga PG
42	6	Boeddeker Park, South PG		88	11	Cayuga Lamaratine
43	6	South of Market RC		89	11	Chalmers, Alice PG
44	6	South Park, East PG		90	11	Merced Heights PG
45	6	South Park, West PG		91	11	Randolph Bright
46	6	Tenderloin RC		92	11	Ocean View, east PG

Appendix B – RPD Wood Play Structure Testing Schedule

No	Test Month	District	Playground	Test Date	Arsenic Yes or No		Date Public Message Posted	Date Results Reported
1	Apr 03	10	Hilltop Park	4/7/2003	Y	1	5/30/2003	4/14/2003
2		2	Lafayette Park	4/29/2003	N		4/29/2003	5/7/2003
3		1	GGP @ Carousel	4/30/2003	Y	2	7/28/2003	6/4/2003
4		3	North Beach, East PG	4/29/2003	Y	3	5/14/2003	5/7/2003
5		3	North Beach, West PG	4/29/2003	N		5/14/2003	5/7/2003
6		5	Hayes Valley	4/29/2003	Y	4	5/14/2003	5/7/2003
7		7	Murphy, J. P. PG	4/30/2003	Y	5	5/14/2003	5/7/2003
8		1	GGP @ 19th Ave	5/1/2003	N		5/1/2003	5/7/2003
9	May 03	1	Rossi PG	5/1/2003	Y	6	5/14/2003	5/9/2003
10		8	Mission Dolores Park	5/5/2003	Y	7	5/14/2003	5/9/2003
11		6	Franklin Square	5/5/2003	N		5/5/2003	5/9/2003
12		1	Cabrillo PG	5/1/2003	N		5/1/2003	5/9/2003
13		2	Cow Hollow	5/1/2003	N		5/1/2003	5/9/2003
14		1	10th Ave./Clement MP	5/1/2003	N		5/1/2003	5/9/2003
15		8	Christopher PG, North	5/5/2003	Y	8	5/14/2003	5/9/2003
16		8	Christopher PG, South	5/5/2003	Y	9	5/14/2003	5/9/2003
17		8	Eureka Valley RC	5/2/2003	Y	10	5/14/2003	5/9/2003
18		10	McLaren Park @ Burrows	5/5/2003	Y	11	5/25/2003	5/21/2003
19		10	Palou-Phelps MP	5/5/2003	N		5/5/2003	5/9/2003
20		11	Merced Heights PG	5/2/2003	Y	12	5/14/2003	5/9/2003
21		11	Brooks Park	5/2/2003	N		5/2/2003	5/9/2003
22		11	Randolph Bright	5/2/2003	N		5/2/2003	5/9/2003
23		11	Balboa Park	5/2/2003	N		5/2/2003	5/9/2003
24		11	Ocean View, East PG	5/5/2003	N		5/5/2003	5/9/2003
25		5	Kimbell PG	5/15/2003	N		5/15/2003	5/21/2003
26		5	Hamilton RC	5/15/2003	N		5/15/2003	5/21/2003
27		8	Peixotto PG	5/16/2003	N		5/16/2003	5/21/2003
28		6	South Park, East PG	5/15/2003	N		5/16/2003	5/21/2003
29		6	South Park, West PG	5/15/2003	N		5/15/2003	5/21/2003
30		3	Hyde/Vallejo MP	5/16/2003	Y	13	5/25/2003	5/21/2003
31		1	Richmond PG	5/15/2003	Y	14	5/25/2003	5/21/2003
32		1	Argonne PG	5/16/2003	N		5/15/2003	5/21/2003
33		2	Mountain Lake Park	5/16/2003	N		5/16/2003	5/21/2003
34		1	Lincoln Park	5/16/2003	Y	15	5/25/2003	5/21/2003
35		4	West Sunset PG	5/16/2003	Y	16	5/25/2003	5/21/2003
36		11	Cayuga PG	5/15/2003	N		5/15/2003	5/21/2003
37		7	Serra, Junipero PG	5/16/2003	N		5/15/2003	5/21/2003
38		7	Golden Gate Heights	5/16/2003	Y	17	5/25/2003	5/21/2003
39		11	Chalmers, Alice PG	5/16/2003	Y	18	5/25/2003	5/21/2003
40	Jun 03	10	Kelloch/Velasco MP	5/28/2003	N		5/28/2003	6/10/2003
41		8	Upper Noe Valley RC	5/28/2003	Y	19		6/10/2003
42		6	Boeddeker Park	5/28/2003	N		5/28/2003	6/10/2003
43		9	Juri Commons MP	5/28/2003	N		5/28/2003	6/10/2003
44		5	Grattan PG	5/28/2003	N		5/28/2003	6/10/2003

o	Test Month	District	Playground	Test Date	Arsenic, Yes or No		Date Public Message Posted	Date Results Reported
5		9	Bernal Heights MP	5/28/2003	N		5/28/2003	6/10/2003
6		4	Sunset RC	5/28/2003	N		5/28/2003	6/10/2003
7		7	Sunnyside PG	5/28/2003	Y	20		6/10/2003
8		8	Glen Park RC	5/28/2003	Y	21	6/14/2003	6/10/2003
9		8	Walter Haas	5/28/2003	Y	22	8/4/2003	6/10/2003
0	Aug03	10	Joseph Lee RC	8/13/2003	Y	23	8/26/2003	8/26/2003
1		10	Silver Terrace PG	8/13/2003	N		8/26/2003	8/26/2003
2		2	Alta Plaza	8/26/2003	N		8/26/2003	8/26/2003
3		4	McCoppin Square	8/13/2003	N		8/28/2003	8/26/2003
4		1	Fulton PG	8/26/2003	N		8/26/2003	8/26/2003
5		2	Presidio Heights PG	8/26/2003	N		8/28/2003	8/26/2003
6	Sep03	3	Washington Square	8/28/2003	Y	24		9/29/2003
7		5	Buchanan St. Mall	8/28/2003	N			9/29/2003
8		10	Poterero Hill, North PG	8/29/2003	Y	25		9/29/2003
9		10	Potrero Hill, East PG	8/29/2003	N			9/29/2003
0		9	Coleridge MP	8/28/2003	N			9/29/2003
1		6	South of Market RC	9/23/2003	N			9/29/2003
2		6	Tenderloin RC	9/23/2003	N			9/29/2003
3		10	Palega PG	NA	NA			NA
4		3	Broadway Tunnel W. MP	8/28/2003	Y	26		9/29/2003
5		10	McLaren Park, Shelley	9/23/2003	Y	27		9/29/2003
6		10	McLaren Park, La Grande	9/23/2003	N			9/29/2003
7	Oct 03	7	Miraloma PG	9/23/2003	N			9/29/2003
8		4	Larsen Park	9/23/2003	N			9/29/2003
9		7	Midtown Terrace PG	9/23/2003	N			10/6/2003
0		1	GGP at 46th Ave	10/6/2003	N			10/7/2003
1		8	Noe Valley Courts	10/6/2003	N			10/7/2003
2		10	Little Hollywood Park	10/6/2003	Y	28		10/22/2003
3		10	McKinley Square	NA	NA			NA
4		11	Cayuga Lamaratine	10/6/2003	Y	29		10/22/2003
	PLAY STRUCTURES TESTED BY PILOT STUDY							
5		10	Hunters' Point RC		NO			8/15/2003
6		5	Buena Vista Park		NO			8/15/2003
7		1	Panhandle		Y	30		8/22/2003
8		9	St. Mary's RC		Y	31		8/15/2003
9		3	Chinese RC		Y	32		8/15/2003
	PLAY STRUCTURES HAVE BEEN OR WILL BE TESTED BY OTHERS							
0		4	Parkside Square		NO			5/16/2003
1		8	24th Street MP		NO			5/15/2003
2		9	Holly		Y	33		
3		1	Rochambeau PG		Y	34		
4		9	Garfield Square		NO			
5		4	Stern Grove		NO			10/11/2002
	COLUMBIA CASCADE PLAY STRUCTURES (known not to contain arsenic)							
6		2	Laurel Hill PG					
7		3	Chinese PG					
8		3	Portsmouth Square East					

9		3	Portsmouth Square West					
0		3	Washington Hyde MP					
1		3	Woh Hei Yuan					
2		9	Precita					

Appendix C: Wood Play Structure Test Results

No.	Playground	Test Date	XRF Reading (PPM)	Wipe Test Reading (ug/cm2)
1	Joseph Lee RC	8/13/2003	27,000	239.000
2	Walter Haas	5/28/2003	33,400	86.000
3	St. Mary's RC	2/26/2003	98,600	25.000
4	Broadway Tunnel West MP	8/28/2003	50,400	12.000
5	Hilltop Park	4/9/2003	12,140	11.800
6	GGP Carousel	04/30/03 05/23/03	100,000	10.000
7	Chinese RC	5/5/2003	200,000	2.400
8	Glen Park	5/28/2003	13,400	2.100
9	Eureka Valley RC	5/2/2003	3,260	1.900
10	Cayuga Lamartine MP	10/6/2003	7,710	1.300
11	North Beach East PG	4/29/2003	8,900	0.900
12	Hyde Vallejo	5/16/2003	50,400	0.840
13	Hayes Valley	4/30/2003	27,400	0.570
14	Mission Dolores Park	5/5/2003	54,500	0.320
15	Alice Chalmers PG	5/16/2003	5,640	0.310
16	McLaren Park, Shelley	9/23/2003	11,000	0.130
17	Panhandle	8/22/2002	3,490	0.110
18	Sunnyside PG	5/28/2003	260	0.095
19	JP Murphy PG	4/30/2003	15,700	0.070
20	Little Hollywood	10/6/2003	1,670	0.064
21	Christopher PG, North	5/5/2003	3,580	0.046
22	McLaren Park, Burrows	05/05/03 05/14/03	17,900	0.045
23	Christopher PG, South	5/5/2003	9,960	0.020
24	Merced Heights PG	5/5/2003	2,190	0.017
25	West Sunset PG	5/16/2003	56,000	0.015
26	Poterero Hill, North PG	8/29/2003	39,700	0.014
27	Upper Noe Valley RC	5/28/2003	9,444	0.011
28	Rossi PG	5/1/2003	3,580	0.008
29	GG Heights	5/16/2003	2,749	0.007
30	Richmond PG	5/15/2003	980	0.007
31	Washington Square	8/28/2003	4,240	0.004
32	Lincoln Park	5/16/2003	8,030	0.001
33	Kelloch/Velasco MP	5/28/2003	<170	-
34	McLaren Park, La Grande	9/23/2003	<120	-
35	South Park, east PG	5/15/2003	<104	-
36	Junipero Serra PG	5/16/2003	<100	-
37	Boeddeker Park	5/28/2003	<93	-
38	Coleridge MP	8/29/2003	<93	-
39	Fulton PG	8/26/2003	<93	-
40	Juri Commons MP	5/28/2003	<90	-
41	Balboa Park	5/2/2003	<87	-
42	Midtown Terrace PG	10/26/2003	<86	-
43	Potrero Hill, East PG	8/29/2003	<84	-
44	Grattan PG	5/28/2003	<82	-

45	Sunset RC	5/28/2003	<82	-
46	Peixotto PG	5/16/2003	<81	-
47	Larsen Park	9/23/2003	<80	-
48	Kimbell PG	5/15/2003	<79	-
49	Mountain Lake Park	5/16/2003	<79	-
50	Noe Valley Courts	10/6/2003	<78	-
51	Presidio Heights PG	8/26/2003	<77	-
52	Buchanan St. Mall	8/28/2003	<75	-
53	Brooks Park	5/2/2003	<74	-
54	Argonne PG	5/16/2003	<73	-
55	South of Market RC	9/23/2003	<71	-
56	Hamilton RC	5/15/2003	<70	-
57	Silver Terrace PG	8/13/2003	<69	-
58	Tenderloin RC	9/23/2003	<69	-
59	Miraloma PG	10/23/2003	<67	-
60	Palega PG	10/6/2003	<67	-
61	McCoppin Square	8/13/2003	<66	-
62	Ocean View, East PG	5/14/2003	<66	-
63	Alta Plaza	8/26/2003	<65	-
64	Cabrillo PG	5/1/2003	<64	-
65	South Park, West PG	5/15/2003	<64	-
66	GGP at 46th Ave	10/6/2003	<61	-
67	Bernal Heights MP	5/28/2003	<59	-
68	McKinley Square	10/6/2003	<59	-
69	GGP @ 19th Ave	5/1/2003	<52	-
70	10th Ave./Clement MP	5/1/2003	<45	-
71	Palou-Phelps MP	5/5/2003	<44	-
72	Cow Hollow	5/1/2003	<41	-
73	Franklin Square	5/5/2003	<38	-
74	24th Street MP	9/9/2002	<32	-
75	North Beach, West PG	4/29/2003	<30	-
76	Lafayette Park	4/30/2003	<26	-
77	Stern Grove	9/16/2002	<2.5	-
78	Cayuga PG	5/15/2003	n/a	-
79	Randolph Bright	5/2/2003	n/a	-

Appendix D: Wood Play Structure Sealing Schedule 2003/2004

	FY	No.	District	Scheduled Month	Date of Sealing	# Months Delay	Arsenic-treated Play Structure
FY 2003/2004	FY 2002/2003	1	10	Feb-03	9/8/2003	6	Joseph Lee RC
		2	3	Mar-03	8/16/2003	4	Washington Square
		3	11	Apr-03	6/14/2004	0	Chalmers, Alice PG
		4		May-03	10/26/2004	5	Cayuga lamaratine
		5	10	May-03	8/19/2003	2	Poterero Hill RC, North PG
		6	3	Jun-03	10/1/2003	3	Broadway Tunnel West MP
		7	10	Jul-03	7/17/2003	0	McClaren Park, Shelley Dr.
		8	5	Nov-03	4/5/2004	4	Hayes Valley
		9	1	Nov-03	7/28/2003	0	GGP @ Carousel
		10	3	Jan-04	8/21/2004	7	North Beach, East PG
		11	7	Jan-04	3/21/2004	2	Murphy, J. P. PG
		12	8	Feb-04	9/10/2004	7	Mission Dolores Park
		13	10	Feb-04	5/17/2004	3	McLaren Park, Burrows St.
		14	8	Apr-04	4/19/2004	0	Christopher, north PG
		15	8	Apr-04	4/19/2004	0	Christopher, south PG
		16	1	May-04	9/22/2004	4	Richmond PG
		17	11	Jun-04	5/3/2004	0	Merced Heights PG
		18	10	Jun-04	6/30/2004	0	Little Hollywood Park
		19	4	Jun-04	2/7/2004	0	West Sunset PG

Appendix E: Wood Play Structure Sealing Schedule 2004/2005

		No.	District	Scheduled Month	Prior Sealing Date	# Months Delay	Arsenic-treated Play Structure
FY 2004/2005	FY 03/04	1	11	May-03	2002	15	Cayuga Lamaratine
		2	3	Jan-04	2002	7	North Beach East
		3	8	Feb-04	2002	7	Mission Dolores Park
		4	1	May-04	7/10/2002	4	Richmond PG
		7	1	Dec-04	2/11/2003		Lincoln Park
		9	1	Dec-04	12/18/2002		Panhandle
		6	7	Jan-05	2/24/2003		Golden Gate Heights
		5	7	Mar-05	3/28/2003		Sunnyside PG
		10	8	Mar-05	3/18/2003		Upper Noe Valley RC
		8	8	Apr-05	5/30/2003		Glen Park RC
		11	10	Apr-05	5/30/2003		Hilltop Park
		12	1	May-05	7/1/2003		GGP @ Carousel
		13	10	Jun-05	7/17/2003		McLaren Park, Shelley
		14	8	Jun-05	8/4/2003		Walter Haas

City and County of San Francisco **Recreation and Park Department**

This play structure does NOT contain **CCA treated** lumber.

The San Francisco Recreation & Park Department would like to inform you that the play structure at this playground does NOT contain chromated copper arsenate (CCA) treated lumber. CCA, the most prevalent wood preservative in the United States, has been used to pressure-treat wood play equipment, picnic tables and benches for many years. Medical studies have demonstrated that arsenic, a CCA component, is carcinogenic.

The RPD has and continues to take measures, recommended by the Consumer Product Safety Commission (CPSC), the United States Environmental Protection Agency and the state, to further minimize risk associated with CCA treated wood products. The RPD stopped buying CCA treated products in 1992, and is in the process of replacing all wood play structures throughout the City. Until all RPD wood play structures can be replaced, wood play structures operated by the RPD are being sealed to prevent arsenic leaching. The sealing operation will be completed in September 2003. The remaining (87) wood play structures will be replaced according to the time line established in the Capital Plan. For more information about the Capital Plan, go to the RPD website at parks.sfgov.org.

McLaren Lodge, Golden Gate Park
501 Stanyan Street
San Francisco, CA 94117-1898

FAX: (415) 666-7130
Phone: (415) 831-2700

City and County of San Francisco **Recreation and Park Department**

The San Francisco Recreation & Park Department would like to inform you that there are chromated copper arsenate (CCA) treated wood products at this playground. The Recreation & Park Department has sealed the wood products at this playground per the requirements established by the State of California. CCA, the most prevalent wood preservative in the United States, has been used to pressure-treat wood play equipment, picnic tables and benches for many years. Medical studies have demonstrated that arsenic, a CCA component, is carcinogenic.

The Recreation & Park Department (RPD) recommends two actions to minimize the health risk associated with use of CCA treated play equipment.

1. **Children should not eat while playing on a wood play structure.**

2. **Children should wash their hands immediately after playing on any wood play structure.**

The RPD has and continues to take measures, recommended by the Consumer Product Safety Commission (CPSC), the United States Environmental Protection Agency and the state, to further minimize risk associated with CCA treated wood products. The RPD stopped buying CCA treated products in 1992, and is in the process of replacing all wood play structures throughout the City. Until all RPD wood play structures can be replaced, wood play structures operated by the RPD are being sealed to prevent arsenic leaching. The sealing operation will be completed in September 2003. The remaining (87) wood play structures will be replaced according to the time line established in the Capital Plan. For more information about the Capital Plan, go to the RPD website at parks.sfgov.org. If you would like further information about the arsenic test results at this playground, call the Recreation and Park Department @ 581-2350.

McLaren Lodge, Golden Gate Park
501 Stanyan Street
San Francisco, CA 94117-1898

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PORT of
SAN FRANCISCO

Rich Chien, LEED AP
Green Building Specialist
Department of the Environment
City and County of San Francisco
11 Grove Street
San Francisco, CA 94102

July 22, 2005

In August 2003 the Port of San Francisco implemented an Arsenic-Treated Wood Inspection program. The intent of the program was to meet the spirit of the San Francisco Board of Supervisors Resolution No. 011-01-COE that required "all City departments who maintain existing playground and park equipment made of preservative-treated wood containing arsenic where contact with human skin is likely to occur ensure proper sealing in accordance with California Safety Health Code section 115775 until such time that all structures have been replaced with arsenic free alternatives." Although the Port of San Francisco does not maintain playground and park equipment its waterfront property is visited by millions of tourists annually.

The Port of San Francisco Arsenic-Treated Wood Inspection program identified location, type of structure, quantity of material, likelihood of contact with human skin, and action recommended. This information is compiled within the attached documents, along with photos of specific structures. The photos are numerically labeled to correspond with the information on the spreadsheet.

Painters from the Port of San Francisco are currently in the process of coating structures that have been prioritized based on the increased probability that contact with human skin is likely. Typically these structures are hand rails and benches. Two types of coatings, latex paint and stain are being utilized depending on the location.

Carol Bach and I are planning on attending the Commission on the Environment meeting on July 26, 2005 to be available to answer any questions that may arise. I look forward to meeting you then. Should you have any questions leading up to the meeting please don't hesitate to contact me.

Sincerely,

Thomas Carter

Tom Carter
Deputy Director, Maintenance
Port of San Francisco
Pier 50, Shed D
San Francisco, CA 94158
(415) 597-7903
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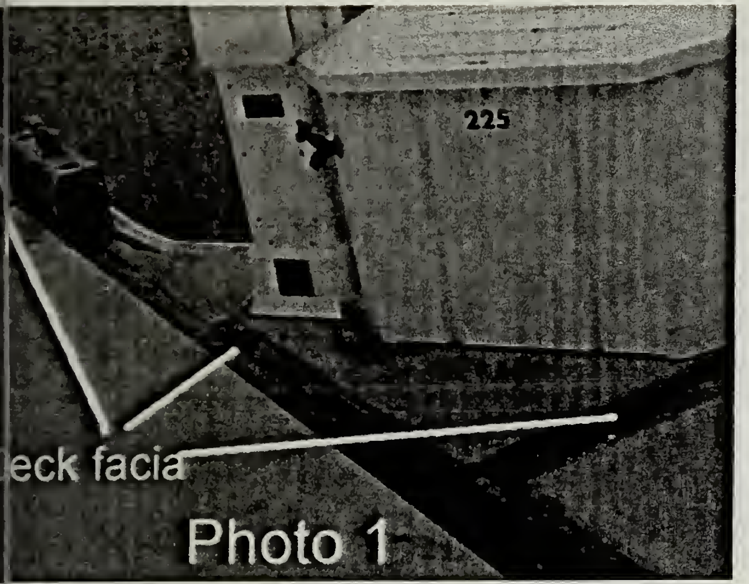

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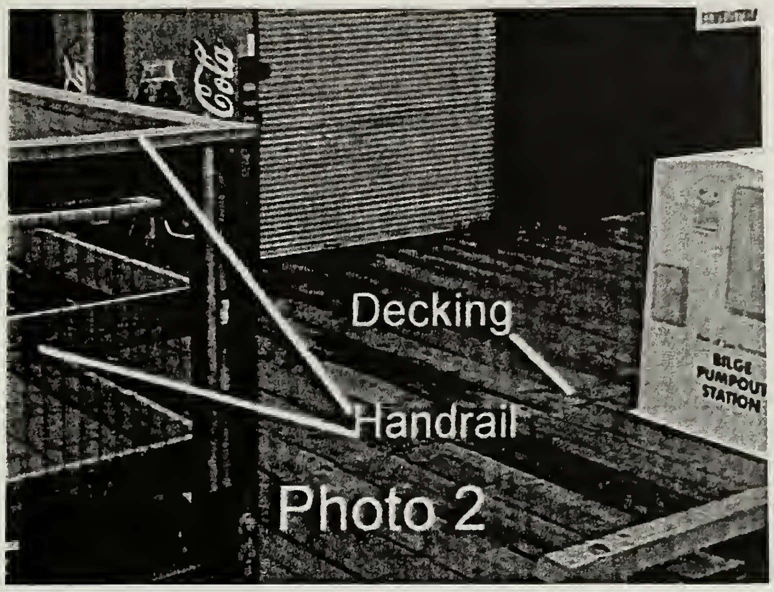

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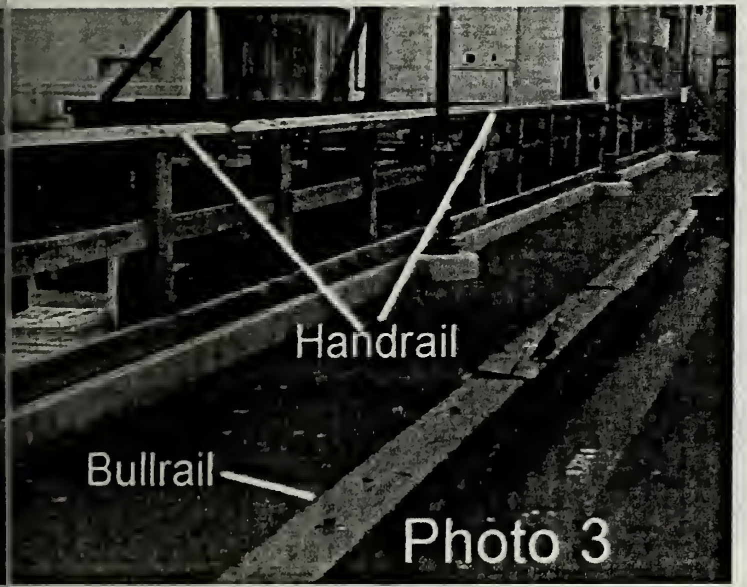
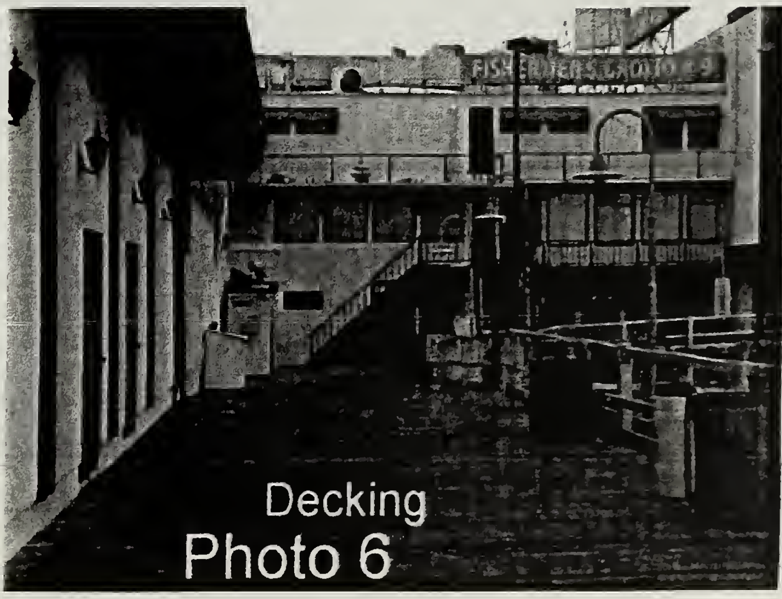


Photo 3

Photo 4

Photo 5



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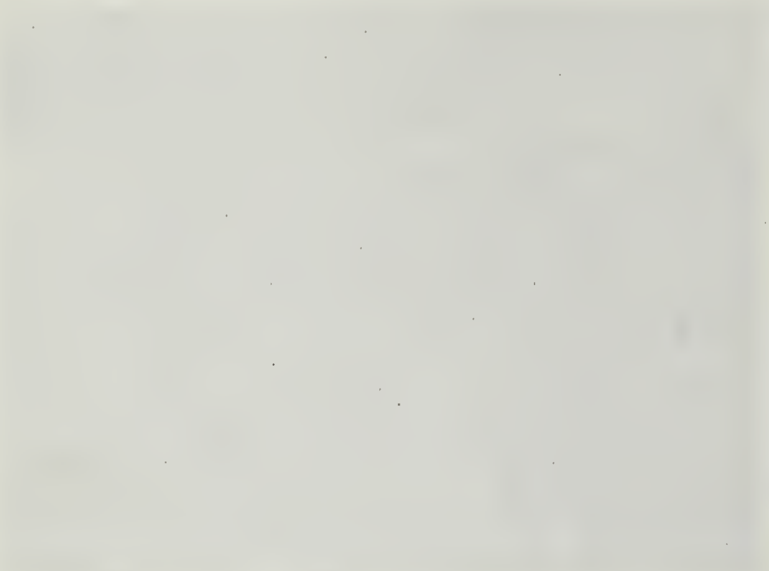

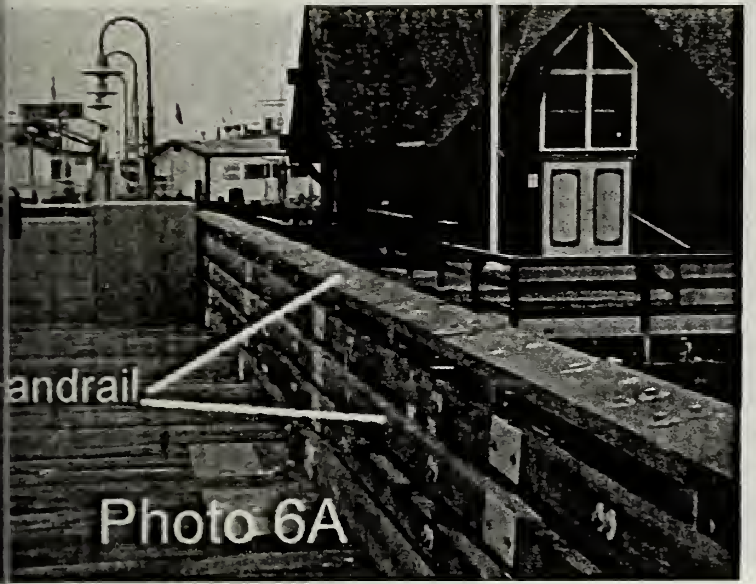
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Photo 6A

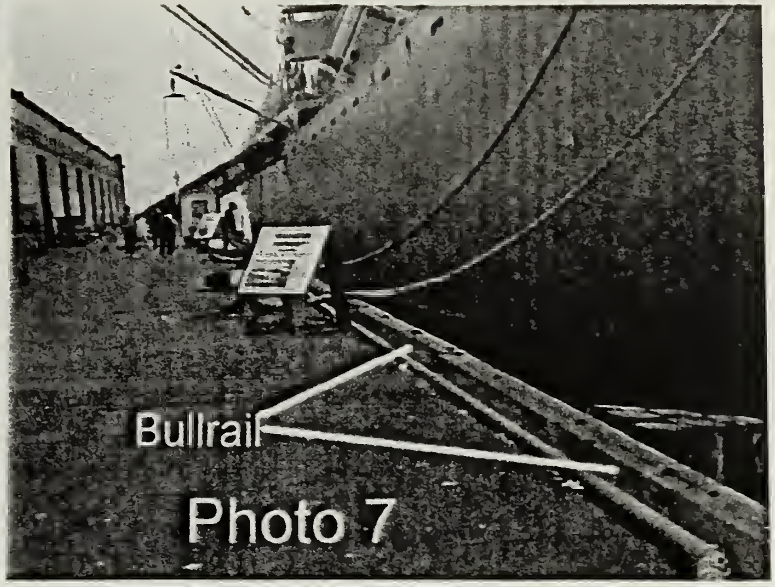
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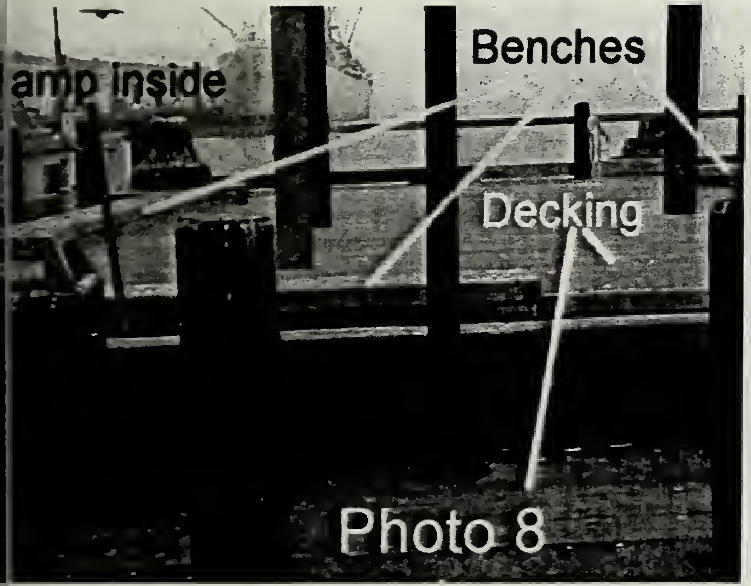
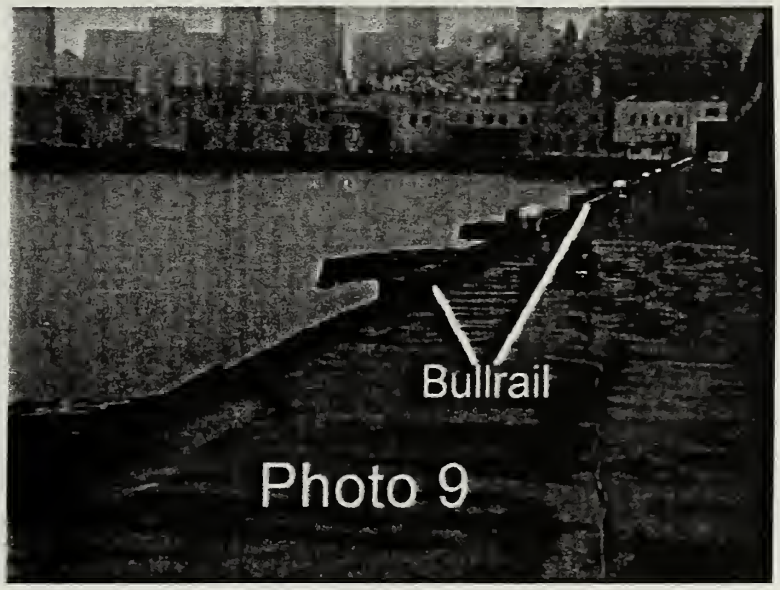
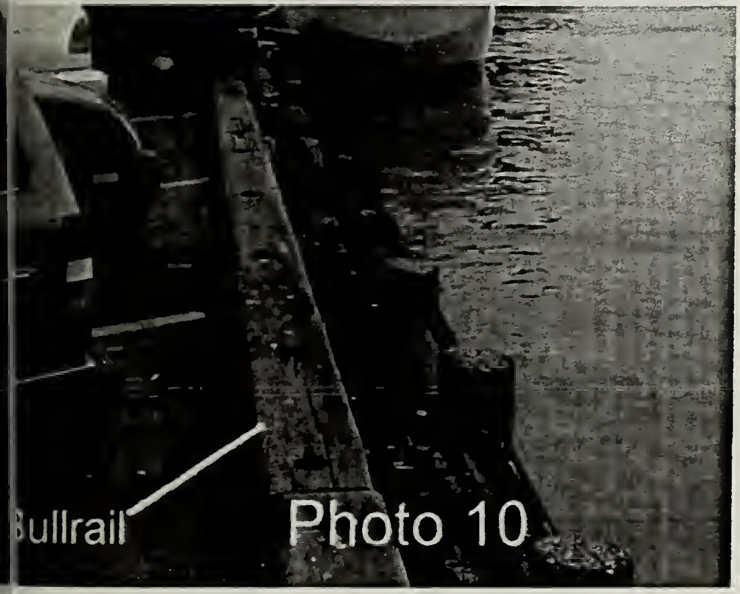
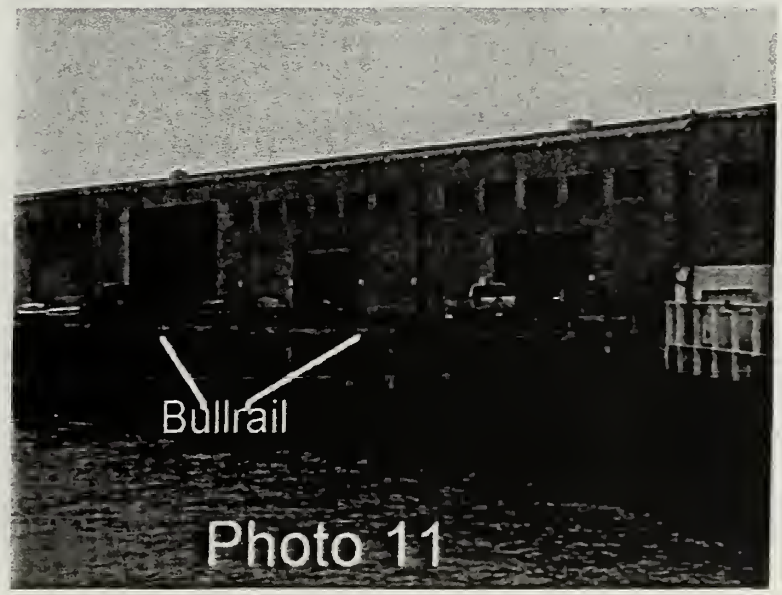
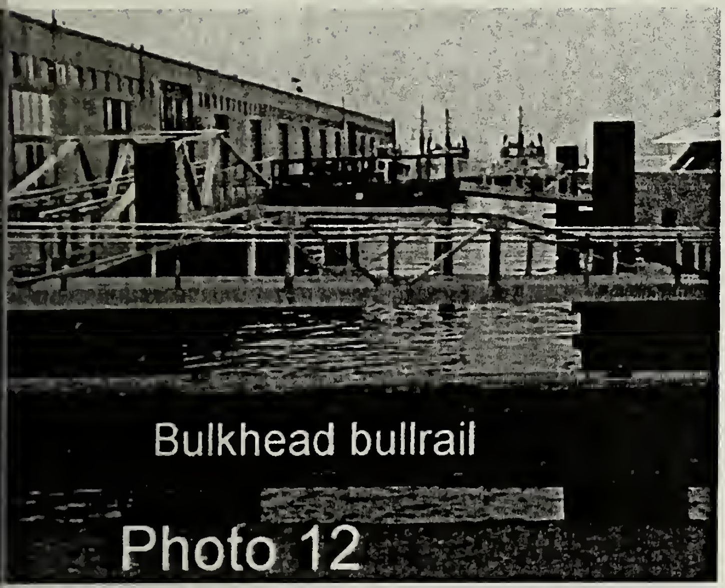
Photo 7


amp inside
Benches
Decking
Photo 8


Bullrail
Photo 9


ullrail
Photo 10


Bullrail
Photo 11



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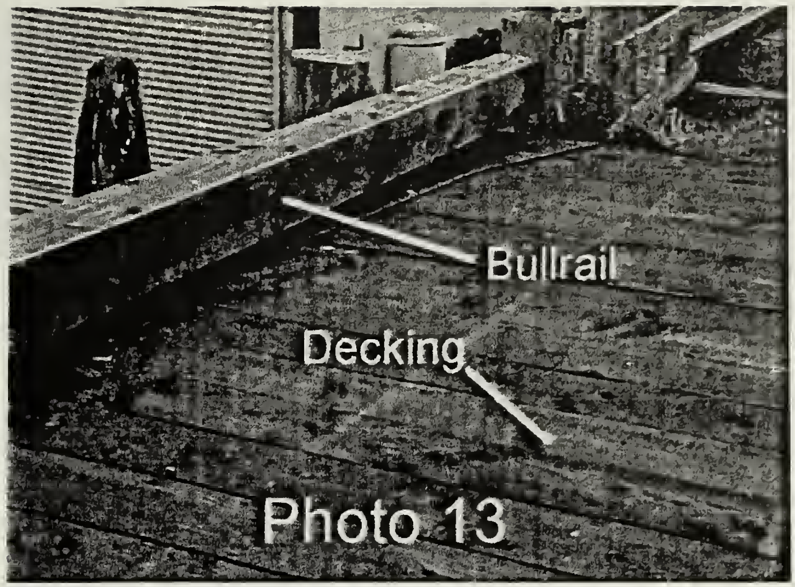
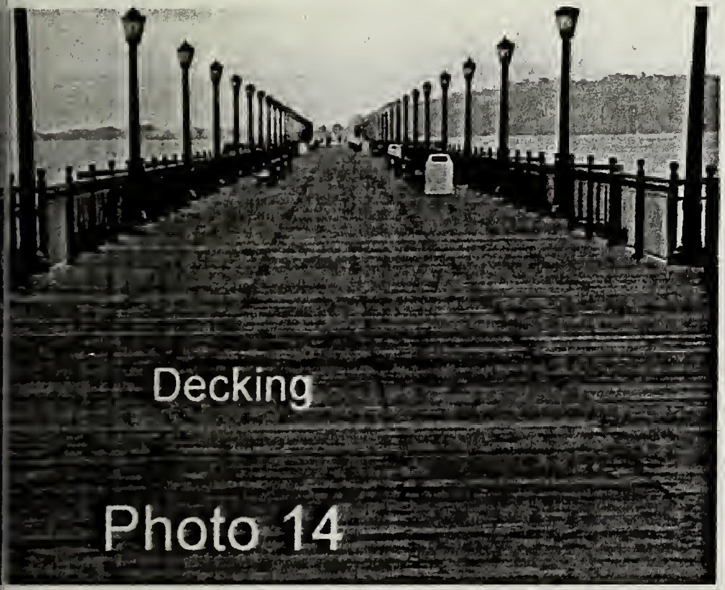


Photo 13



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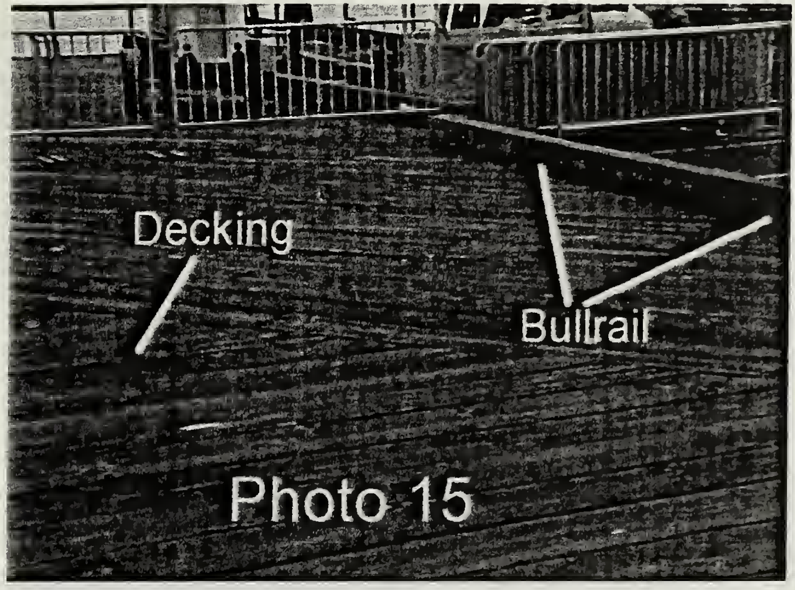

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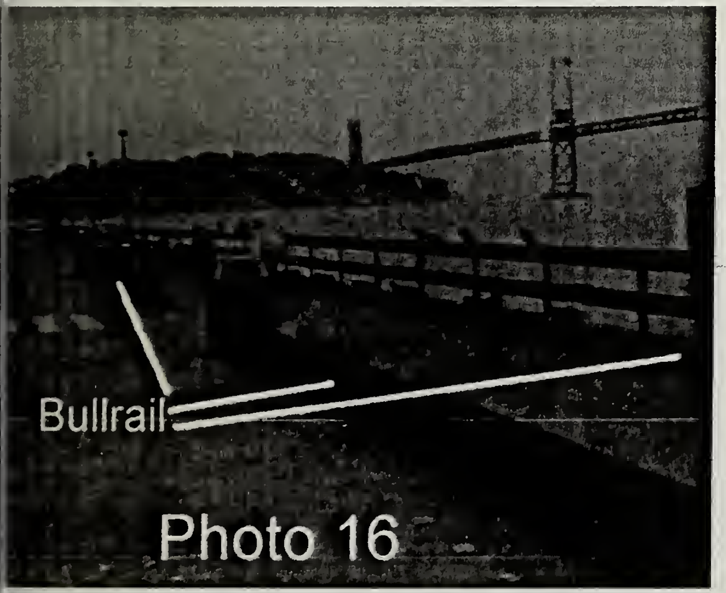

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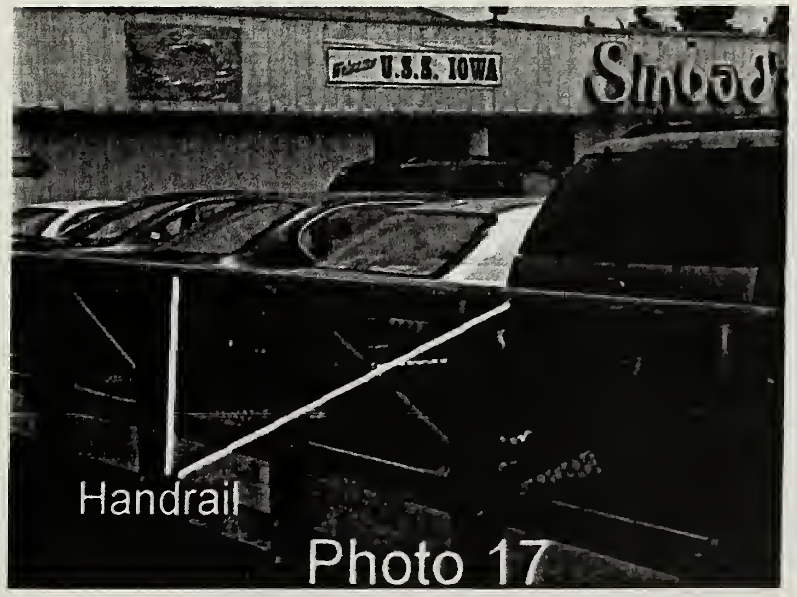

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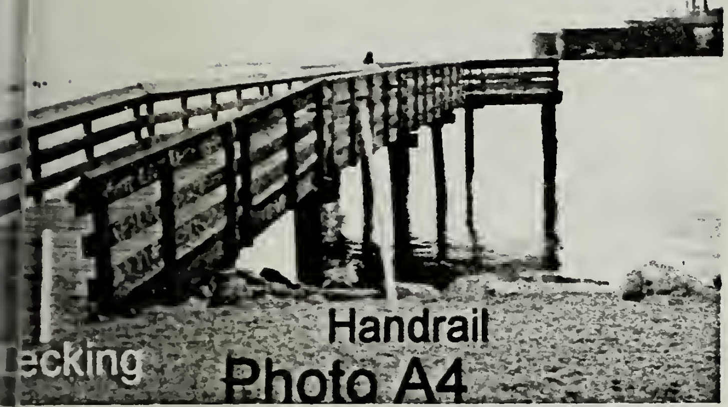

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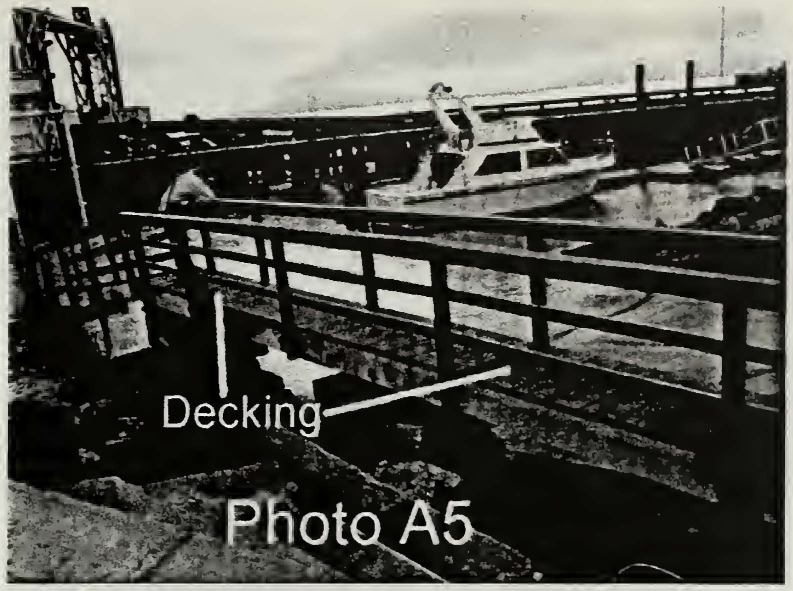

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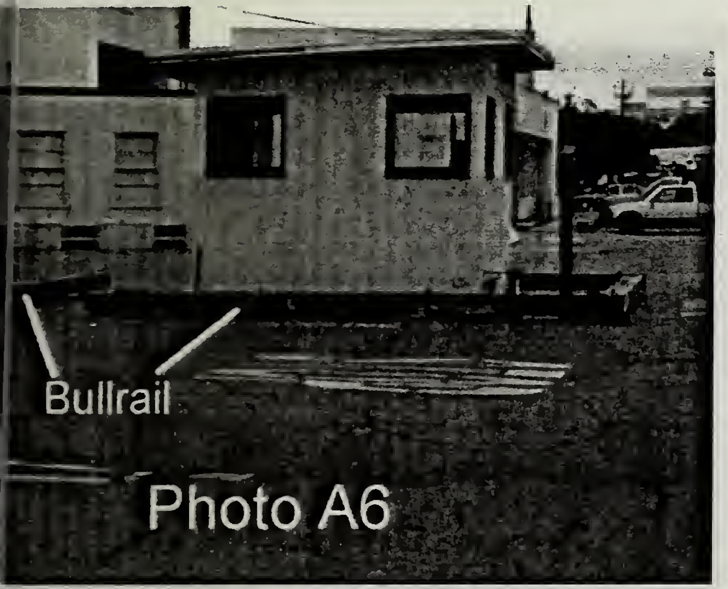

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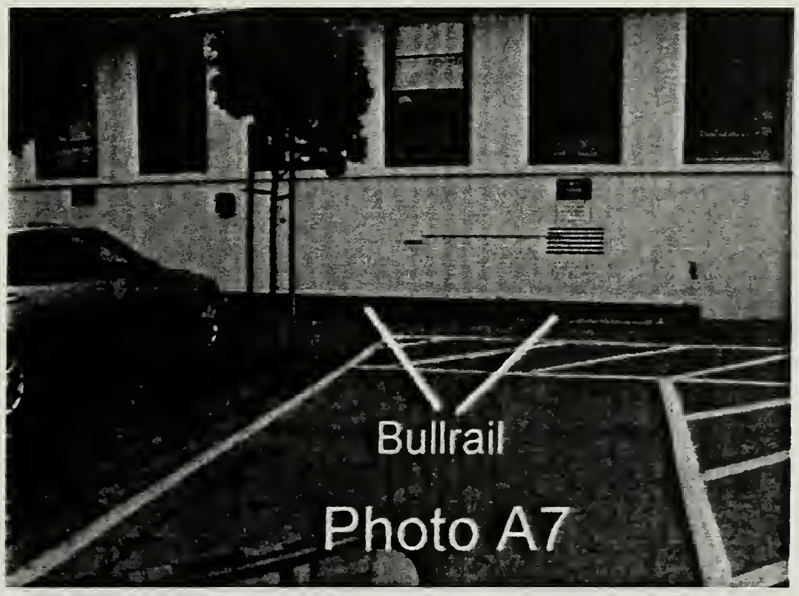

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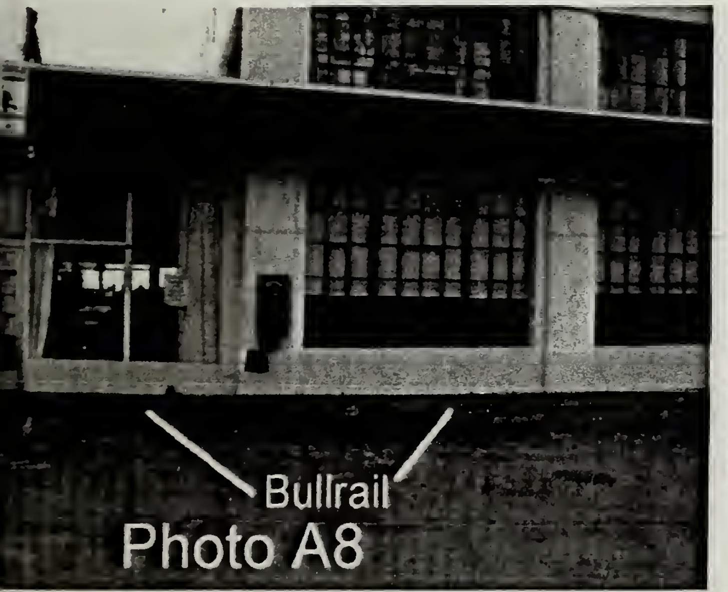
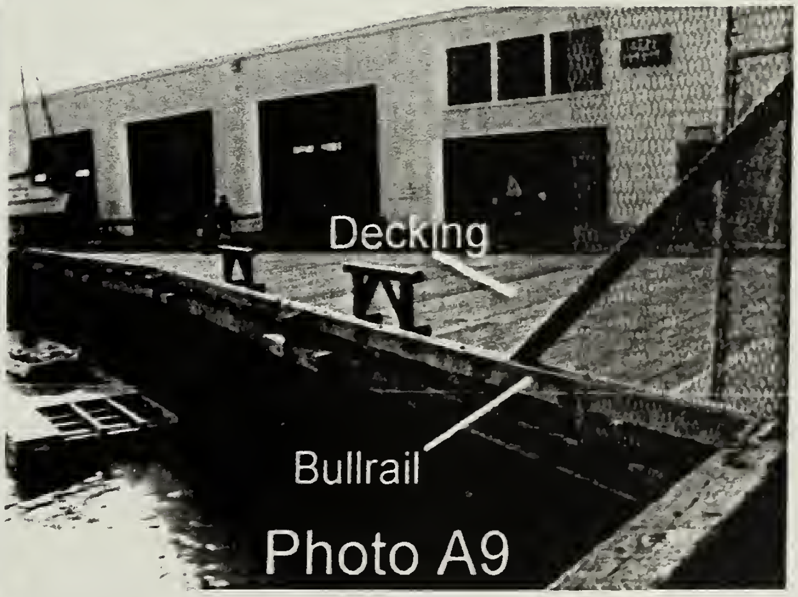


Photo A8



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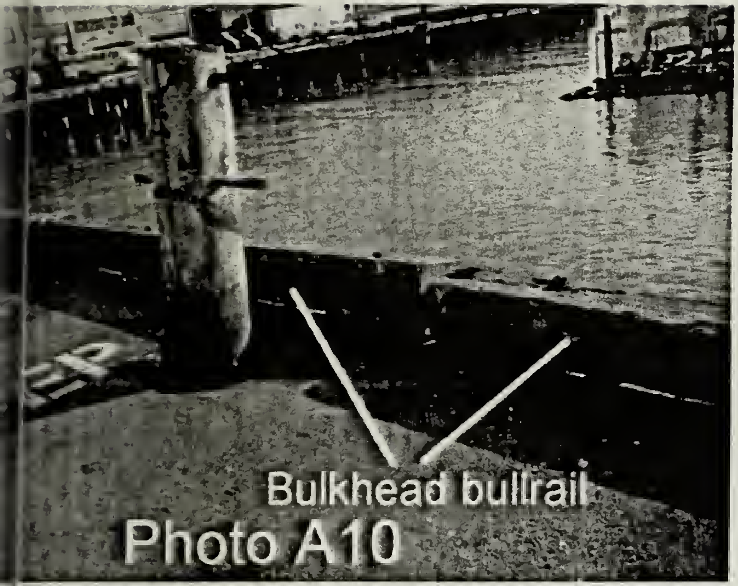

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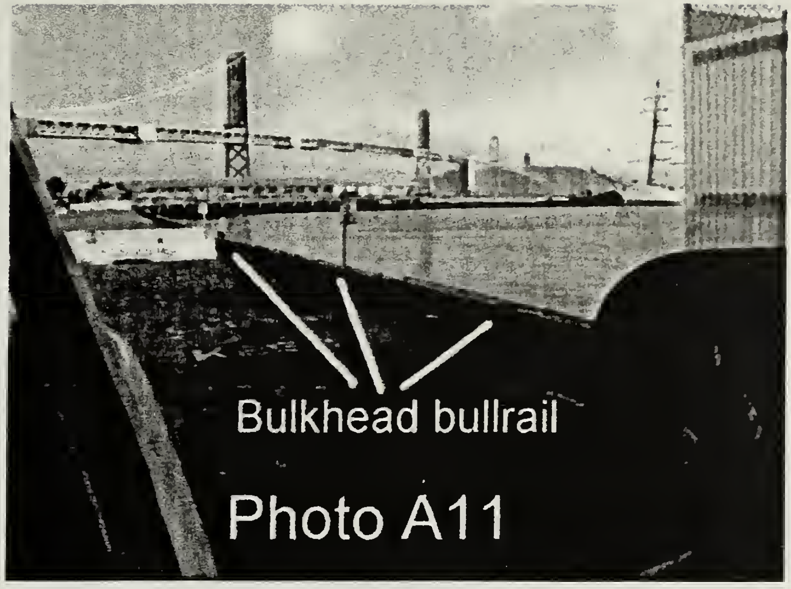

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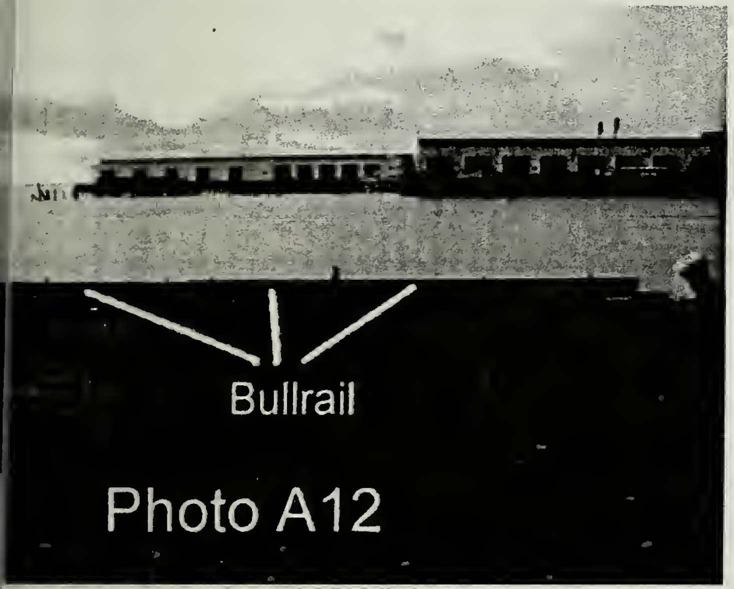

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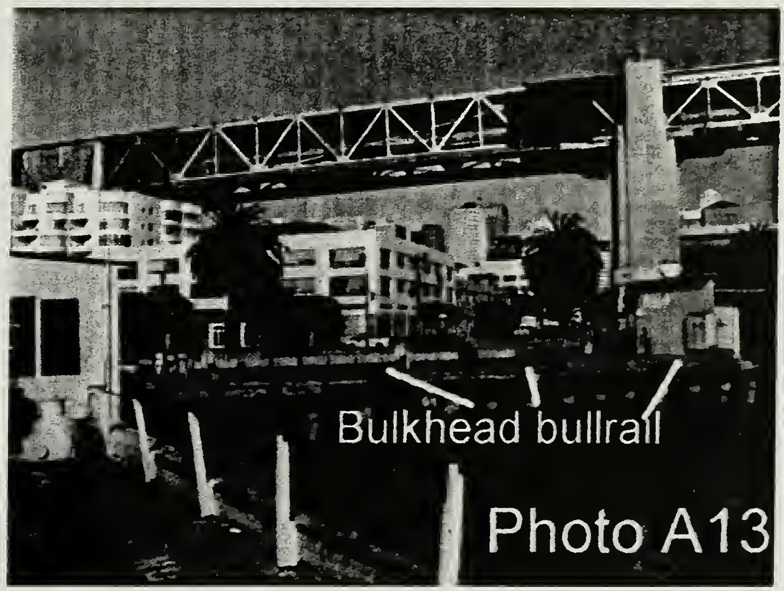

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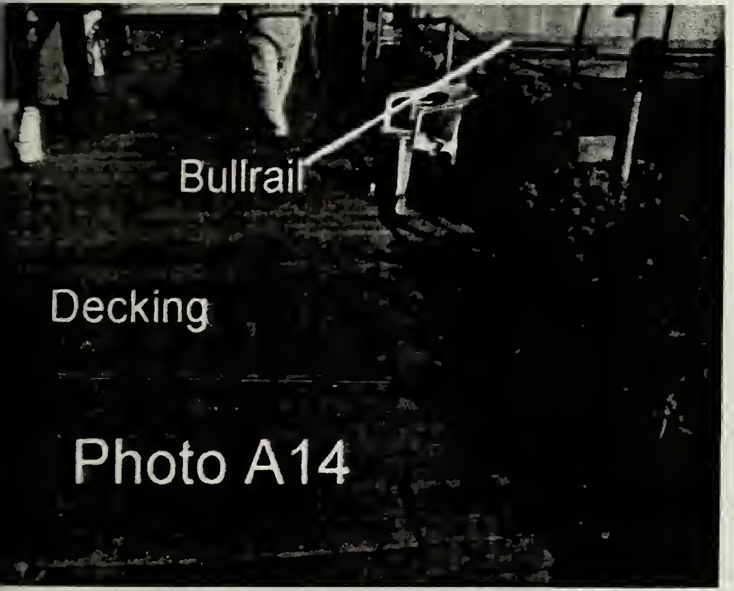

Photo A14

Arsenic-Treated Wood Inspection

Note: record only known or suspected arsenic-treated wood (i.e. chemenite, ACZA, CCA). Do not include creosote-treated wood, redwood or other untreated wood, painted wood, or plastic/wood composite. As = aresenic.

Location (date of inspection)	**Map ID #**	**Type of structure (e.g. deck, bullrail, handrail, fender pile, bench, sign post)**	**Approximate Quanity (number, lin.ft., sq. ft.)**	**Digital Photo #**	**Action**	**Rating**	**Priority**	**Notes (e.g. observations about use, access, likelihood of contact w/ human skin)**
Mission Rock Public Fishing Pier	(4)	Decking and Hand rail	1000 sq. ft. Decking 1000 sq. ft/ Bull rail	A-4	Handrails Completed.	1	1	Heavy contact by fishermen and others. People use benches, not observed sitting on decking. Part of handrail already painted – extend painting to rest of handrail.
J-3	(6)	Decking, handrail stall piles See(5)	7456 Sq. Ft Handrail 250 lf Handrail	#6 & 6A	Paint handrail to match existing Scheduled to be completed in August 2005	1	2	Heavy foot traffic and hand contact with Handrail.
Bulkhead between 30 & 28 (Reds)	(14)	Bulk head bull rail	109 l.f. 12 x 12 bull rail	A-13	Stain Bullrail	1	3	Heavy contact by public. Recommend seal or test.
Hyde Street Fuel Dock	(2)	Decking, and handrail on ramp, bull rail	103 lf Handrail 220 sq. ft Ramp deck 770 sq. ft. main deck	#2	Stain Hand Rail Scheduled to be completed in August 2005	1	4	Contact mostly by fuel customers and employees. Contact limited to Handrail and fender pile (could have plastic sheeting) Decking and bullrail limited to foot traffic.
Hyde St. Harbor (8/18/03)		Handrail, north, east and south edges of deck & along ramp to fish alley	200 ft.	001	Stain Hand Rail Scheduled to be completed in August 2005	1	5	
Hyde Street Harbor Parking Lot	(3)	Hand Rail, Bull Rail	263 lf Handrail 582 lf Bullrail	#3	Stain Hand Rail	1	6	Moderate contact by tourist and fishermen especially Handrail.
Pier 43-1/2 Fog Bell Area	(8)	Decking, benches, wheelchair ramp	2000 sq. ft decking, benches & ramp 826 l.f. Bullrail	#8	Stain Benches	1	7	Moderate bullrail contact by tourists (standing, sitting, eating). All 6 years old. Heavy contact in bell tower area by the residentially challenged. ?
inbads	(117)	Hand rail	117 l.f. Handrail	#17		1	8	Moderate contact by customers
yde St. Harbor		Bull-rail, east edge of parking lot	150 ft	002		2		Harbor users or visitors observed or likely to sit on bullrail at dock-side.

ating: 1=High probability of human skin contact; 2=Moderate probability of human skin contact, content structure not designed for contact use; 3=Low or no probability of human skin contact

Pier 45		Fender piles Replacing	10	003		2		Fishermen are in frequent contact while using piles to get in and out of boats. Most are creosote treated, but found 3 As-treated wood.
Hyde Street Harbor	(1)	Facia Decking on concrete floats	3,504 lf Facia	#1		2		Contact likely during boat tie-up by fishermen and others using harbor.
Stall Piles	(5)	Treated Wood Stall Piles		#5		2		Some contact by fishermen and other boat owners.
Pier 45 East	(7)	Bull Rail	1100 l.f.	#7		2		Some contact by tourists, especially on South End. People observed sitt on bullrail, eating.
Pier 35	(9)	South and North apron Bull rail	1800 l.f. Bull rail	#9		2		Minimum contact by passengers and longshoremen. No significant contact.
Pier 27	(10)	South Apron in parking lot area bull rail	426 l.f. bullrail	#10		2		Minimum contact by parking lot patrons. No significant contact.
Pier 23	(11)	Bull rail north parking area	692 l.f. Bullrail	#11		2		Minimum contact. No significant contact.
Pier 15/17	(12)	Bull rail on Bulkhead	341 l.f. 12x12 Bullrail	#12	Photo #12 is P-Q South Apron	2		Minimum to moderate contact by public. People occasionally observed sitting, eating. Recommend testing.
ier 9	(13)	North side Bull raill, deck bulk head between 9 and Waterfront Restaurant	788 l.f. Bullrail and Bulkhead 2020 sq. ft. decking	#13		2		Light contact by bar pilots and employees. Light foot traffic. No significant contact with skin.
G Building (south of Pier 1)	(18)	Bull rail	228 l.f. Bull rail	#18 No photo		2		Minimum contact.

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Pier 80	(3)	Bull rail south side and face	3825 l.f.	See A12 Typical		2		Minimum contact by longshoremen.
Pier 80	(3)	Bull rail south side and face	3825 l.f.	See A12 Typical		2		Minimum contact by longshoremen.
Pier 50D	(6)	Bull rail in front of shed and bull rail around guard shack	165 l.f. Bull rail	A6		2		Minimum contact
Jelly's	(8)	Bull rail in front	40 l.f. bull rail	A8		2		Minimum contact
Bulk Head between Pier 38 & 36	(10)	Bulk head bull rail	137 l.f. 12x12 bull rail	A-10		2		Minimum to moderate contact by public. All foot traffic.
3ulkhead between Piers 34 & 36	(11)	Bulk Head bull rail	590 l.f. 12 x 12 bull rail Pier 36 to Pier 32	A-11		2		Minimum to moderate contact by public.
ulk head between Piers 36 and 32	(12)	Bulk head bull rail		A-11		2		Minimum to moderate contact by public.
ier 30-32	(13)	Bull rail around pier	1920 l.f. bull rail	A-12		2		Minimum contact
ier 22½ Firehouse	(15)	Decking and bull rail	1932 sq. ft. Decking	A-14		2		Moderate contact by firemen. Minimum contact by public. All foot traffic.
rry Plaza and World Trade Center	(16)	Bull rail	1757 l.f. Bullrail	#16		2		Moderate contact by public. Other seating available.
de St. Harbor (8/15/03)		Deck				3		Used for pedestrian traffic, sitting or touching deck unlikely.
r 43.5, Fog Bell area		Benches	3			3		Handrail in this area are all untreated redwood.
r 47 (Scomas)	(4)	Decking, Bullrail	8600 sq. ft Decking 20 l.f. Bullrail	#4		3		Much foot traffic by Scoma customers and other tourists. Table set up on treated decking. Est 10+ years since instll'n. Recommend for testing?

ing: 1=High probability of human skin contact; 2=Moderate probability of human skin contact, content structure not designed for contact use; 3=Low or no probability of human skin contact

Pier 7	(14)	Decking	33.272 sq .ft. decking	#14		3		Heavy foot traffic by public. Recommend testing @ east end where heavy use by fishermen.
Pier ½	(15)	2 x 12 Decking bullrail 4 x 12 Decking	7,718 sq. ft. Decking 340 l.f. Bull rail	#15		3		Moderate foot traffic, moderate contact. Light foot traffic, no significant contact, other seating available.
Pier 96	(1)	Bull rail on face	2630 l.f.	See A 12 typical		3		Minimum contact.
Pier 94 Ask about Pier 90	(2)	Bull rail on face	94 & 96 combined	See A12 typical		3		Minimum contact.
Public Launch Ramp Ask about Pier 54	(5)	Decking	310 sq. ft. 210 + 70	A5		3		Light contact by bar pilots and employees. Light foot traffic. No significant contact with skin.
Eye Institute (near Pier 50)	(7)	Parking lot bull rail	570 l.f. bull rail	A7		3		Minimum contact
Pier 38 and 36	(9)	Decking and bull rail North side	4280 sq. ft. decking 155 l.f. bull rail	A-9		3		Moderate contact by employees and others. All foot traffic.

ating: 1=High probability of human skin contact; 2=Moderate probability of human skin contact, content structure not designed for contact use; 3=Low or no probability of human skin contact

CHAPTER 13

ARSENIC-TREATED WOOD

Sec. 1300. Findings and Purpose.

Sec. 1301. Definitions.

Sec. 1302. Environmentally Preferable Alternatives.

Sec. 1303. Purchase of Alternatives.

Sec. 1304. Exemptions.

Sec. 1305. Replacing Existing Structures; Management Program.

Sec. 1306. Report to Commission.

Sec. 1307. Report to Board of Supervisors.

Sec. 1308. Disposal.

Sec. 1309. Citywide Ban.

Sec. 1310. Guidelines.

SEC. 1300. FINDINGS AND PURPOSE.

The Board of Supervisors finds and declares that:

(a) Preservative-treated wood containing arsenic poses potential health risks to children in San Francisco who are potentially exposed to arsenic, a known human carcinogen, by playing on City wooden playground and park equipment. Studies conducted in California, Connecticut and Florida suggest that arsenic leaches from preservative-treated wood containing arsenic and can end up on children's hands and in their mouths.

(b) California Health and Safety Code Section 115775 requires that play structures constructed with preservative-treated wood containing arsenic be adequately sealed every two years.

(c) Preservative-treated wood containing arsenic poses potential human health and environmental risks through the release of arsenic during manufacture, installation, and disposal of wood.

(d) There are a variety of alternatives to preservative-treated wood containing arsenic compounds readily available throughout California.

(e) Preservative-treated wood is also used for saltwater immersion environments for structures such as pilings and piers, but until such time as a viable alternative is available, best management practices should be followed for these uses.

(f) Under this Chapter, the City and County of San Francisco wishes to exercise its power to make economic decisions involving its own funds as a participant in the marketplace and to conduct its own business as a municipal corporation to ensure that purchases and expenditures of public monies are made in a manner consistent with its policies.

(g) This Chapter applies the Precautionary Principle to the selection and maintenance of pressure treated wood used to build City structures such as buildings, decks, fences, and play equipment by banning the use of arsenic-containing wood preservatives and requiring protective sealing of existing structures. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.1; added by Ord. 15-03, File No. 021791, App. 2/7/2003)

SEC. 1301. DEFINITIONS.

Whenever used in this Chapter, the following terms shall have the meanings set forth below.

(a) "Preservative-treated wood containing arsenic" shall mean wood treated with a preservative that contains arsenic, elemental arsenic, or an arsenic copper combination, including but not limited to, chromated copper arsenate preservative, ammoniacal copper zinc arsenate preservative, or ammoniacal copper arsenate preservative.

(b) "City Department" shall mean any department of the City and County of San Francisco. City Department does not include any other local agency or any federal or State agency, including but not limited to the San Francisco Unified School District, the San Francisco Community College District, the San Francisco Redevelopment Agency, and the San Francisco Housing Authority.

(c) "Commission" shall mean the Commission on the Environment provided for by San Francisco Charter Section 4.118.

(d) "Contract" means a binding written agreement, including, but not limited to a contract, lease, permit, license or easement between a person, firm, corporation or other entity, including a governmental entity, and a City Department for the purchase of preservative-treated wood.

(e) "Contractor" shall mean an individual, trust, firm, joint stock company, corporation, partnership, and governmental entities, to the extent allowable by law, that enters into a Contract with a City Department.

(f) "Department" shall mean the San Francisco Department of the Environment provided for by San Francisco Charter Section 4.118.

(g) "Saltwater immersion" shall mean a pressure-treated wood that is used for construction purposes or facilities that are partially or totally immersed in saltwater. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.2; added by Ord. 15-03, File No. 021791, App. 2/7/2003)

SEC. 1302. ENVIRONMENTALLY PREFERABLE ALTERNATIVES.

No later than March 30, 2003, the Department shall identify, prepare and adopt, at a public meeting, a list of environmentally preferable alternatives to preservative-treated wood containing arsenic. The list shall include information on specific wood preservatives, appropriate applications for each preservative, costs, product availability and another pertinent information. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.3; added by Ord. 15-03, File No. 021791, App. 2/7/2003)

SEC. 1303. PURCHASE OF ALTERNATIVES.

Except as provided in this Section, after June 30, 2003, each City Department entering into a new Contract or extending the term of an existing Contract for the purchase of preservative-treated wood products, and each Contractor purchasing preservative-treated wood products on behalf of the City, shall only purchase such products from the list of alternatives adopted by the Department pursuant to Section 1302 of this Chapter. A City Department or Contractor that purchases preservative-treated wood containing arsenic for saltwater immersion shall be exempt from this Section. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.4; added by Ord. 15-03, File No. 021791, App. 2/7/2003)

SEC. 1304. EXEMPTIONS.

(a) On or after June 30, 2003, a City Department or Contractor may apply to the Department for an exemption from the ban on the purchase of preservative-treated wood containing arsenic imposed by Section 1303. The application for an exemption shall be filed on a form specified by the Department. The Department may grant the exemption upon a finding that the City Department or Contractor has:

(1) Made a good faith effort to purchase an alternative on the list adopted by the Department pursuant to Section 1302 of this Chapter; or has demonstrated that the alternative is not economically viable for the proposed use or is not practical in limited circumstances; and

(2) Developed a best management practice, including a plan for minimizing leaching or contact with human skin, if the exemption is granted. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.5; added by Ord. 15-03, File No. 021791, App. 2/7/2003)

SEC. 1305. REPLACING EXISTING STRUCTURES; MANAGEMENT PROGRAM.

(a) No later than June 30, 2003, each City Department who owns or maintains playground equipment that is constructed with preservative-treated wood containing arsenic, where contact with human skin is likely, shall (i) take an inventory of such structures and develop a timeline and cost analysis for replacing these structures with non-wood alternatives or with alternatives on the list adopted by the Department pursuant to Section 1302 of this Chapter; (ii) develop a written management program for preservative-treated wood containing arsenic, including best management practices, schedules and protocols for testing for leaching of arsenic and chromium, sealing and posting of warning language where contact with human skin is likely and update this program on a regular basis; and (iii) provide the Department with copies of these documents. (b) No later than June 30, 2003, each City Department who owns or maintains park structures other than playground equipment, including benches and picnic tables, that are constructed with preservative-treated wood containing arsenic, where contact with human skin is likely, shall develop a plan to inventory and manage, including sealing and replacement, such structures and submit that plan to the Department. (c) No later than June 30, 2003, each City Department that owns or maintains facilities not addressed in Sections (a) or (b) above that are constructed with preservative-treated wood containing arsenic and where frequent contact with human skin is likely, shall take an inventory of its facilities and submit a plan to seal or replace such facilities. Each City Department subject to this Section shall provide the Department with a copy of the inventory and plan. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.6; added by Ord. 15-03, File No. 021791, App. 2/7/2003)SEC. 1306. REPORT TO COMMISSION. No later than September 30, 2003, the Department shall report to the Commission on the progress of the programs and mandates directed by this Chapter. The report, at a minimum, shall include the following information: (a) A list of the alternatives to preservative-treated wood containing arsenic pursuant to Section 1302. (b) A list of City Departments and Contractors requesting an exemption to this Chapter. (c) A summary of the reports submitted to the Department pursuant to Section 1305. (d) Any other information deemed relevant to eliminating the risk of exposure to preservative-treated wood containing arsenic. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.7; added by Ord. 15-03, File No. 021791, App. 2/7/2003)SEC. 1307. REPORT TO BOARD OF SUPERVISORS. No later than June 30, 2005, the Commission shall report to the Board of Supervisors on the progress of the programs and mandates directed by this Chapter. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.8; added by Ord. 15-03, File No. 021791, App. 2/7/2003)SEC. 1308. DISPOSAL. All City departments shall dispose of preservative-treated wood containing arsenic in an approved landfill and shall not make preservative-treated wood containing arsenic available for re-use, incineration or for use as wood chips or mulch. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.9; added by Ord. 15-03, File No. 021791, App. 2/7/2003)SEC. 1309. CITYWIDE BAN. No later than June 30, 2003, the Department of Building Inspection and the Department shall investigate and report to the Commission on the possibility of imposing a citywide ban on the sale, purchase and installation of preservative-treated wood containing arsenic. At a minimum, the report shall contain an assessment of the legality, feasibility and cost implications of imposing a citywide ban. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.10; added by Ord. 15-03, File No. 021791, App. 2/7/2003)SEC. 1310. GUIDELINES. The Department may issue guidelines, after a public meeting, to assist City Departments in the implementation of this Chapter. (Added by Ord. 171-03, File No. 030422, App. 7/3/2003) (Derivation Former Administrative Code Section 21G.11; added by Ord. 15-03, File No. 021791, App. 2/7/2003)

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SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: July 26, 2005 **ITEM NO. 8**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Treasure Island Draft Sustainability Plan

☒ Supporting Information: LEED Gold Standard

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***This list reflects the explanatory documents provided.**

Presentation to TIDA
Treasure Island Draft Sustainability Plan
March 9, 2005

Introduction

> *"Rock walls composed of 287,000 tons of quarried rock were sunk in the shoals. Twenty million cubic yards of sea bottom were dredged up and piled within the walls. When the sand was 13 feet above sea level, engineers "unsalted" it by a leaching process. Barges brought 50,000 cubic yards of loam from the mainland to enrich it. When the engineers finished, a 400-acre island, a mile long and two-thirds of a mile wide, had appeared in the Bay. The world's largest man-made island now has risen from the waves."*
>
> *1939 World's Fair statement on the creation of Treasure Island*

We now have a unique and historic opportunity to transform Treasure and portions of Yerba Buena Islands (referred to hereafter as Treasure Island or TI, except when otherwise specified) into an environmentally sustainable urban community. The process of designing and building a sustainable Treasure Island is an overarching core principle that will be integrated into all other aspects of this project. The entire project should have the goal of becoming a model by exhibiting the concepts and practices of sustainable community development.

The City and TICD have expressed strong support for providing sustainable development practices at Treasure Island. This draft Sustainability Plan specifies that environmentally sustainable practices will be integrated as part of the infrastructure and construction throughout the project.

The provisions for sustainable development will be articulated in more detail as this document, and other documents are negotiated by the stakeholders. For example, the Design for Development Agreement will call for certain land use and building requirements that will require the use of sustainable design practices in both the horizontal and vertical components of the project and the Design, Review and Document Approval Procedure for Vertical Improvements (Vertical DRDAP), will call for the use of green building measures and energy efficient utilities by vertical developers.

As the transaction and entitlement process continues, sustainable development practices will be highlighted. Two general areas of development will be considered through the lens of sustainable design practices. First is the horizontal or infrastructure development and land preparation. This part of the development process focuses on land development: deconstructing the old infrastructure systems on Treasure Island (roads, sewers, buildings, etc.), constructing an entirely new infrastructure system and preparing pads for vertical development. Specific implementation for sustainable development on the horizontal development on Treasure Island will have to be compatible with, and contingent upon, environmental regulatory direction, established land use covenants and specific geotechnical conditions. The second area of development is the vertical construction: building the new residences, commercial space and other amenities. Each of these areas of development will have their own unique features. At this juncture, key concepts which have been discussed include: deconstruction and demolition techniques; hazardous materials remediation; storm water management; decentralized sewage treatment; recycling and composting; energy conservation; provision of renewable energy; land use policies that emphasize strong neighborhoods; walkability and a network of attractive public places; sustainable design practices; creating effective nodes for alternative transportation; and open space planning that minimizes energy and water consumption, encourages native plant usage and promotes biodiversity. Each of these policy issues is discussed below.

This draft Sustainability Plan represents City staff's current analysis of the sustainable design issues that will be part of the future redevelopment of Treasure Island. These issues, and the goals and objectives for responding to them, are subject to change and modification during the negotiations with TICD, and the measures discussed are part of the iterative work of the negotiations with TICD that will require serious analysis of each measure's benefits, feasibility, viability and practicality. As the project is developed in further detail and the project economics become less uncertain, subsequent versions of this Sustainability Plan will incorporate refinements and more specific measures for meeting the goals and objectives outlined herein.

Resource Efficient Infrastructure

Building Statistics

In the United States buildings consume more than 30% of our nation's total energy and 60% of its electricity every year. According the US Department of Energy, buildings generate 49% of sulfur dioxide emissions, 25% of nitrous oxide emissions and 10% of particulate emissions – these numbers are based on conventional building practices that are typically fragmented, oversized, inefficient and unhealthy.

Development of Green Building

Green building, or sustainable building, is changing the way that buildings are designed, built and operated. Green building promotes an integrated approach to design that engages all team members early in the process to create a building that is comprehensive, efficient, and healthy.

In 2000 the US Green Building Council (USGBC) published the LEED (Leadership in Energy and Environmental Design) Green Building Rating System® which is a voluntary, consensus-based national standard for developing sustainable buildings. LEED® currently has rating systems for the following building sectors: new commercial construction and major renovations (LEED-NC), existing building operations (LEED-EB), commercial interiors (LEED-CI), core and shell (LEED-CS) and is in the process of developing rating systems for homes (LEED-H) and neighborhood Development (LEED-ND). Currently there are over 1,700 buildings in 50 states that are seeking LEED certification and 157 are LEED certified. The numbers that are being reported from these projects are very encouraging: the Swiss Re Tower in London – 50% less energy consumption than a comparable conventional building; the Conde Nast Building at 4 Times Square in New York City – 35 to 40% less energy than a conventional building; the Robert Redford Building in Santa Monica, CA – 60% less water than a conventional building; and the list goes on. Higher productivity, less illness and absenteeism and higher test scores with students are also benefits that are being realized from green building.

USGBC is truly affecting the marketplace as seen by the use and adoption of the LEED rating systems by Federal Agencies, States, Cities, 13 other countries and the private sector. Rick Fedrizzi, president and chief executive of the USGBC says, "The green-building movement really is about understanding the building as an organism and understanding how all the systems play together. We are living in a much different age than we did in the 1970s and '80s, when everything was fast and cheap and quick and glitzy. Now it's about thoughtful construction, safe construction and enduring construction. As green buildings garner more attention, a popular misconception is that they cost more. If you start the process early, with an educated team, you can do it for not a penny more than conventional construction".

Green Building in California

The State of California strongly supports green building as seen by its participation in the development of several of the LEED Rating Systems and the Collaborative for High Performance Schools (CHPS) program and rating system. In addition, the State and Consumer Services Agency has established a Sustainable Building Task Force to develop a strategy to achieve the sustainable building goal found in former Governor Davis' Executive Order D-16-00, and to implement the resulting 10-point plan described in *Building Better Buildings: A Blueprint for Sustainable State Facilities*. In December 2004, Governor Schwarzenegger signed the Sustainable Buildings Executive Order requiring that all new and renovated State buildings achieve a LEED Silver or higher certification and that all State buildings be 20% more energy efficient by 2015, and encouraging the private sector to do the same.

Green Building in San Francisco

In May 2004, San Francisco adopted Chapter 7 of the Environment Code – *Green Building Standards*– requiring all new municipal construction projects to achieve a LEED Silver or higher certification by USGBC. This accomplishment has set San Francisco as a leader among municipalities. The San Francisco Department of the Environment's (SFE) Green Building team oversees the environmental design and performance of all municipal construction projects, chairs the inter-departmental Resource Efficient Building Task Force, develops green building policy, guidelines, tools and training for City design professionals, initiates revisions to building codes to allow for high performance technologies, supports residential and commercial green building efforts, and collaborates with appropriate City departments to ensure that basic infrastructures are developed to support green building in the City.

Treasure Island As a Landmark Green Building Development

The USGBC is in the process of developing the LEED Neighborhood Development (LEED-ND) Rating System. By the first quarter of 2006, USGBC is expecting to make its call for pilot projects for LEED-ND. TIDA staff, SFE staff and TICD have discussed having the proposed project participate in this LEED-ND pilot project effort. The pilot project process involves working closely with USGBC and industry experts to inform the development of the LEED-ND rating system and providing assistance to the Treasure Island development to achieve high levels of economic, environmental and social performance. By agreeing to participate, TIDA, SFE and TICD are all reaffirming their individual and collective commitment to sustainable design and green building development.

Approach for a Sustainable Neighborhood Development

The organizing principles and priority for Sustainable Neighborhood Developments should follow this sequence:

- Integrated Design Process – ensure coordination, synergy and cost savings across disciplines
- Sustainable sites and hydrology – supporting and enhancing existing natural features
- Open Space, landscaping, park lands and natural areas – creating a network of connected parks and natural areas
- Circulation and transportation – pedestrian and transit oriented development
- Land Use– compact development preserving open space and undeveloped areas.

The following sections define these principles and provide supporting information.

Integrated Design Process

GOALS: Initiate an integrated design process involving all stakeholders including owners, project managers, financial officers, architects, engineers, estimators, contractors (or construction managers), facilities managers and end users. Retain a Project Sustainability Coordinator with responsibility for achieving agreed upon environmental goals.

OBJECTIVES: This early coordination of efforts enables synergies and cost savings among disciplines and solving certain problems that cannot be addressed in a more linear process. It allows for more advanced technologies to be considered and provides a building or neighborhood that operates as a comprehensive interactive system. For more information see: http://www.buildinggreen.com/auth/article.cfm?fileName=131101a.xml

Horizontal Development

1. Sustainable Sites and Hydrology

A. Erosion and Sedimentation Control

GOALS: Meet LEED-NC® Sustainable Sites Prerequisite for Erosion and Sedimentation Control

OBJECTIVES: Prevent loss of soil during construction by storm water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse. Prevent sedimentation of storm sewer or receiving streams and/or air pollution with dust and particulate matter. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 37-38.

B. Storm Water Management

GOALS: Minimize or eliminate storm water runoff. If possible, eliminate curbs and catch basins. Meet LEED-NC® Sustainable Sites—Storm Water Management Credit 2

OBJECTIVES: The project should seek to maintain the hydrologic cycle and shall protect water quality by minimizing disturbances, saving trees, supporting and enhancing natural landforms and drainages, minimizing consumptive water use, utilizing integrated vegetative storm water techniques and pervious paving materials. Where beneficial, the project should seek, to the greatest extent possible, given the environmental regulatory direction and established land use covenants set by state and federal regulators and Treasure Island's unique geological makeup, to allow storm runoff to filter into the ground to help reduce downstream flooding. Carefully planned infiltration swales and basins and measures to reduce impermeable surfaces are generally less costly than the conventional practice of installing storm sewers and building large detention ponds. Examples include: maximizing planted open space, avoiding contiguous impermeable surfaces, minimizing roadway width, incorporating living roofs on buildings, storing roof runoff for later use, and using porous paving materials. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 47-49.

GOAL: Reduce or Eliminate Polluted Stormwater Runoff to the Bay

OBJECTIVES: Construct wetlands for storm water treatment. Treatment wetlands can remove a variety of contaminants (including fertilizers, pet waste, crankcase oil, pulverized brake linings) prior to discharge into the Bay. Bodies of water, plants and microbes naturally remove water contaminants. Constructed wetlands-closely mimic natural systems in their operation, harboring diverse, complex ecosystems. By constructing artificial wetlands, we also learn more about the value of *natural* wetlands—and why we need to protect them. Provide a source of recycled water in dry season to maximize aesthetic, ecological and pollutant sequestering values.

Maximize treatment level of polluted runoff. While mechanical liquid/solid separators are considerably better then nothing, they do not remove all pollutants.

C. Innovative Wastewater Technology

GOAL: Use the best available technology for the reuse of sewage and residual stormwater, using these flows as resources rather than waste products.

OBJECTIVES: Replace the existing sewage treatment plant with a decentralized, on-site, state-of-the-art, small-footprint, odor-free plant, integrated into the landscaping that can recycle water for irrigation purposes, treat sewage for disposal without unnecessary costs and can treat storm water to levels appropriate for tertiary uses. Carefully consider alternatives to chlorine and choramine for disinfection, such as ozone and ultra-violet light.

Identify uses for recycled water, including enhancement of the stormwater treatment wetlands, landscaping, etc., and create an appropriate storage and distribution system.

Treasure Island's unique location in the Bay provides an opportunity to both treat sewage in an environmentally appropriate manner and help treat residual storm water as part of the larger wetlands program. By constructing an on-site treatment plant and a constructed storm water treatment wetlands, the comprehensive wastewater management program can function to symbiotically improve water quality and provide a source of recycled water while increasing habitat value and providing educational opportunities.

http://www.buildinggreen.com/auth/article.cfm?filename-030402a.xml

2. Open Space and Landscaping

A. Reduced Site Disturbance

GOAL: Protect and restore existing vegetation. Meet LEED-NC® Sustainable Sites—Reduced Site Disturbance Credit 5.1

OBJECTIVES: Costs to protect vegetation can be easily recouped through having to spend less on plantings following construction. Large trees significantly boost property values. Protection of shade trees can allow downsizing of air conditioning equipment, because cooling loads can be reduced. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 44-47.

B. Water Efficient Landscaping

GOAL: Limit or eliminate potable water use for landscaping. Meet LEED-NC® Water Efficiency—Water Efficient Landscaping Credit 1 (both points)

OBJECTIVES: Indigenous landscaping supports wildlife and biodiversity far better than conventional turf. Native landscaping also does not require irrigation and chemical treatments (fertilizer, herbicides, pesticides, etc.). In most cases, it costs less to landscape with native vegetation than to put in lawns and non-native plant species. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 53.

C. Integrated Pest Management

GOAL: Minimize pesticide use. Meet LEED-EB Credits 10.4 & 10.5 – Low Environmental Impact Pest Management Policy

OBJECTIVES:

1. Select locally adapted, pest resistant, and/or native plant species for landscape plantings.
2. Use landscape designs and measures that exclude weeds, such as weed cloth, mulches, dense plantings, and mowing strips.
3. Use landscape designs and measures that maintain vigorous plant growth to minimize landscape pest problems, for example, by installing easily maintained, computerized irrigation systems, ensuring proper drainage, and using compost to build soil fertility.

D. Biological Diversity

GOAL: Protect and restore existing natural habitat and wildlife

OBJECTIVES: Identify and map the naturally occurring habitats on Yerba Buena Island and assure their protection from development and inappropriate uses. Remove or control invasive introduced species as necessary to protect natural ecosystems. Utilize the nursery proposed for TI to propagate native species for restoration and re-introduction, specifically, Yerba Buena (Satureja douglasii), the island's namesake. Manage the natural areas of YBI in cooperation with the City's Natural Areas Program. Prohibit the use of invasive exotics in the landscaped areas. Consult with the Audubon Society regarding tree trimming and removal, trail placement, and other activities that could impact wildlife.

GOAL: Maximize the natural values of the developed and horticultural portions of the islands.

OBJECTIVES: Use wildlife-friendly plants. Restrict night lighting that could interfere with bird migration.

3. Circulation and Transportation

A. Pedestrian/Bicycle Oriented Development

GOAL: Reduce automobile use for intra-island transportation to the greatest extent possible by the establishment of pedestrian and bicycle friendly land uses and support facilities.

OBJECTIVES: The project should seek to create dense and cohesive neighborhoods (given the site constraints and constraints imposed by other regulatory agencies) that are in close proximity to the key transit nodes, such as that proposed at Pier One. This will allow residents and visitors to walk, bike or ride an on-Island alternative fuel shuttle to basic services, commercial venues, recreational experiences, and other public spaces. The project shall provide sufficient bicycle parking facilities at commercial and transit nodes, as well as a free bicycle program for use by island residents and visitors.

B. Transit Oriented Development

GOAL: Tie development to transit nodes and emphasize transit alternatives and importance of major transit node at Pier One. Meet LEED-NC® Sustainable Sites—Alternative Transportation Credit 4.1

OBJECTIVES: The project should seek to reduce pollution and other impacts from automobile use by emphasizing transit alternatives, such as ferries, buses, car share opportunities, organized car pooling, and possibly private water taxi systems and jitneys. Adopt mitigation measures to minimize any significant impacts that may occur to the traffic congestion on and approaching the Bay Bridge. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 41-44.

C. Alternative Fuel Vehicles

GOAL One: Require the use of zero emission vehicles by government agencies and encourage their use by businesses and non profits on the island, and provide preferred parking for AFV's.

GOAL Two: Develop alternative fuel infrastructure on Treasure Island to support the use of clean air vehicles, including the production of clean fuels such as bio-diesel and hydrogen and use of electric, bio-diesel, natural gas and hydrogen vehicles.

OBJECTIVES: Reduce pollution and oil dependence by encouraging the use of alternative fuel vehicles. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 41-44.

D. Parking Capacity

GOAL One: Discourage automobile use through parking capacity controls and reduced speed limits.

OBJECTIVES: The project should seek to limit parking by implementing standards that are below current minimum planning code requirements for both on- and off-street parking, providing preferred parking for carpools and vanpools, implementing a CarShare program with the necessary car share pod on site and, to the extent feasible, unbundling parking from housing units. Consider bundling transit passes with condo fees and with hotel room fees. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 41-44.

E. Promote The Use of Public Transportation

GOAL: Establish comprehensive public transit options as part of a comprehensive Transportation Demand Management program established, implemented and administered by a Treasure Island Transportation Coordination Committee.

OBJECTIVES: Offer a variety of options, including:

- Ferry service to San Francisco, and ultimately to the East Bay
- Upgraded MUNI service to the Transbay Terminal, with some runs continuing to points beyond, especially the Financial District and Civic Center
- New AC Transit service to Oakland transit hub
- Organized ridesharing
- Possible water taxi service
- A coordinated transit hub at Pier One
- On-island transit options making mass transit more efficient and less time consuming
- Minimize the need for transfers by placing most dwelling units within a half-mile walk of the ferry terminal
- Bus and ferry systems that can easily accommodate bicycles

regulatory constraints such as the U.S. Department of Interior standards for historic structures. Meet LEED-NC® Materials and Resources—Building Reuse Credit 1.1

OBJECTIVES: Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

B. New Commercial Buildings

GOAL: Require that all new commercial buildings achieve, at a minimum, a LEED-NC® Silver certification level from the U.S Green Building Council (USGBC), with a stated goal of achieving LEED NC Gold certification as more specific information is available regarding the commercial component of the project.

OBJECTIVES: LEED for New Construction and Major Renovations (LEED-NC) is a green building rating system that was designed to guide and distinguish high-performance commercial and institutional projects. For more information see: http://www.usgbc.org/LEED/publications.asp

GOAL: Incorporate pest prevention as a design and maintenance objective for new commercial buildings. Meet LEED-EB Credits 10.4 & 10.5 – Low Environmental Impact Pest Management Policy

OBJECTIVES:

a. *Design to exclude pests from new buildings*, using design features such as single-pour slabs, sealing of pipe breaks, sand barriers beneath foundations, sealed wall cavities, injection of boric acid into wall voids, installation of door sweeps, and appropriately screened foundations, attic vents, and windows.
b. *Design to reduce potential pest harborage* in or near new buildings, using features such as bird-repellent roof designs, removal of all cellulose-containing materials from building sites, use of wall coverings that do not provide insect harborages (i.e., avoid pegboard), and keeping vegetation (such as ivy) at least three feet away from buildings.
c. *Design to improve moisture management in new buildings*, using features such as moisture barriers beneath foundations, adequate ventilation, and appropriate drainage near foundations.
d. *Design to facilitate inspection and maintenance* in new buildings, for example, by designing-in easy access to foundations and to pipe breaks in foundations, building-in access to areas covered by suspended ceilings, and by building for easy sanitation by:
    i. designing floors and shelves for easy cleaning
    ii. elevating dumpsters
    iii. including coves at wall/floor junctures to prevent accumulation of debris, and sloping kitchen and bathroom floors for easy drainage.

C. Tenant Improvements—Commercial Buildings

GOAL: Require that all tenant improvements in new commercial buildings achieve, at a minimum, a LEED-CI® Silver certification level from the U.S Green Building Council (USGBC), with a stated goal of achieving LEED-CI Gold certification as more specific information is available regarding the commercial component of the project.

OBJECTIVES: LEED for Commercial Interiors (LEED-CI) addresses the specifics of tenant spaces in office, retail, and institutional buildings. LEED-CI is part of a comprehensive suite of LEED green building rating tools developed by USGBC to promote green design, construction, and operations practices in buildings nationwide. For more information see: http://www.usgbc.org/LEED/leed_interiors.asp

Hotels should be managed as "green hotels" where, for example, sheets and towels are exchanged only on request, soaps and toiletries are biodegradable, and lighting is automatically controlled.

D. Residential Buildings

GOAL: Require that new housing units and renovated permanent housing units (units that have an anticipated life span of more than 10 years) be subject to a high level sustainability goal that will be determined at the time the Disposition and Development Agreement is completed, through agreement between the Department of the Environment and the other stakeholders involved in the project. The priority would be using one of the high level standards adopted by the US Green Building Council, which will be presenting the Leadership in Energy and Environmental Design rating system for homes in 2007.

OBJECTIVES: The State of California, in collaboration with *Bay Area Build it Green*, a coalition of local government representatives, environmental groups, homebuilders, and product manufacturers is developing a state-wide residential green building rating system. It is expected that city and county municipalities will then adopt these guidelines to encourage or require that residential developers and homebuilders achieve certain environmental performance measures in their residential building projects.

GOAL: Incorporate pest prevention as a design and maintenance objective for new residential buildings. Meet LEED-EB Credits 10.4 & 10.5 – Low Environmental Impact Pest Management Policy

OBJECTIVES:

a. *Design to exclude pests from new buildings*, using design features such as single-pour slabs, sealing of pipe breaks, sand barriers beneath foundations, sealed wall cavities, injection of boric acid into wall voids, installation of door sweeps, and appropriately screened foundations, attic vents, and windows.
b. *Design to reduce potential pest harborage* in or near new buildings, using features such as bird-repellent roof designs, removal of all cellulose-containing materials from building sites, use of wall coverings that do not provide insect harborages (i.e., avoid pegboard), and keeping vegetation (such as ivy) at least three feet away from buildings.
c. *Design to improve moisture management in new buildings*, using features such as moisture barriers beneath foundations, adequate ventilation, and appropriate drainage near foundations.

4. Land Use

A. Site Selection

GOAL: Avoid development in areas severely impacted by hazardous materials or set aside for public spaces by the State Lands Commission and the Bay Conservation and Development Commission and reduce environmental impacts from the location of buildings on a site. Meet LEED-NC® Sustainable Sites—Site Selection Credit 1

OBJECTIVES: The project should seek to avoid development on portions of sites that are severely impacted by hazardous materials, are designated as public spaces by the State Lands Commission and the Bay Conservation and Development Commission, contain habitat for threatened or endangered species, wetlands, or parklands. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 39.

B. Brownfield Redevelopment

GOAL: Achieve maximum cleanup of the toxic substances left by the Navy, as required by State and Federal regulatory agencies.

OBJECTIVES: Work with the Department of Defense and Congress to fund and implement timely and thorough remediation of all toxics, consistent with and to facilitate the building and open space uses proposed in the current development plan.

C. Development Density

GOAL: Density of developed areas shall meet LEED-NC® Sustainable Sites—Urban Redevelopment Credit 2.0

OBJECTIVES: The project should seek to cluster development into identified neighborhoods or zones and preserve larger areas of open space, thereby reducing the costs (and environmental impacts) of pavement, sewer lines, utility lines, stormwater system, etc., and making a car-free lifestyle a more viable option The open space also serves to protect local ecosystems and biodiversity. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 68-69.

D. Minimize Paved Area

GOAL: Reduce costs, increase permeability and open space.

OBJECTIVES: The project should seek to minimize the amount of roads, driveways, access roads and parking areas, reduce impervious surfaces, preserve open space, and reduce resource consumption. Also keep streets and driveways as narrow as is practicable, and look for ways to reduce parking requirements. Offer employee and visitor incentives to use public transit. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 68-69.

E. Construction Waste Management

GOAL: Divert at least 75% of construction, demolition and land clearing debris from landfill disposal. Meet LEED-NC® Materials and Resources—Construction Waste Management Credit 2.2

OBJECTIVES: The project should implement a construction waste management plan. For more information see: Green Building Compliance Guide for San Francisco Municipal Buildings, pages 68-69.

GOAL: Deconstruct all buildings with substantial recoverable materials, as indicated by the survey completed in 1997. Deconstruction will utilize labor from TI associated agencies, specifically the Treasure Island Homeless Development Initiative and Job Corps, with a training element geared to preparing workers for construction employment. Buildings appropriate for demolition will recover resources on-site for use on island to the greatest degree possible.

OBJECTIVES: This can include stockpiling and grinding of inerts and organics for reuse and batching into necessary construction and landscaping materials.

F. Infrastructure

GOAL: Select sites that require minimal extension of the area to be served by infrastructure.

OBJECTIVES: Where roadways, water, sewer, and utility lines require minimal extension, the infrastructure costs of development can be significantly reduced - while the environmental impacts of development are reduced and more pristine, undeveloped land is preserved.

G. Solar Orientation

GOAL: Use appropriate street alignment or width and development patterns to reduce shading and maximize solar energy potential for all buildings.

OBJECTIVES: The project shall make every effort to align building shape, height and orientation to utilize natural energy flows. Proper street and lot layout enable energy efficiency, human comfort and renewable energy production in the built environment. For more information see:
http://www.buildinggreen.com/search/index.cfm?q=passive+solar&x=11&y=7

Vertical Development

A. Building Reuse

GOAL: For historic buildings, the gym, and the school, maintain at least 75% of existing code-compliant building structures and shell (exterior skin and framing, excluding window assemblies and nonstructural roofing material) subject to

d. *Design to facilitate inspection and maintenance* in new buildings, for example, by designing-in easy access to foundations and to pipe breaks in foundations, building-in access to areas covered by suspended ceilings, and by building for easy sanitation by:
   i. designing floors and shelves for easy cleaning
   ii. elevating dumpsters
   iii. including coves at wall/floor junctures to prevent accumulation of debris, and sloping kitchen and bathroom floors for easy drainage.

E. Waste Prevention and Recycling

GOAL: Achieve the City's solid waste diversion goal of 75% by 2010

OBJECTIVES: Waste prevention, reuse, recycling and composting are important techniques that will be utilized to meet the City's goals of resource conservation and create a sustainable, livable community for TI: public, private, recreational, commercial and residential. Waste prevention, recycling and composting objectives include:

- Placement of standard trash and recycling receptacles at strategic locations along main thoroughfares, at mass transit stops, and at parks and open spaces including the marina.
- Creating an effective recycling program in all public, commercial and residential spaces.
- Establishing a composting collection program for public, commercial and residential uses. Composting will take place on-Island, likely in conjunction with the Urban Garden planned for Treasure Island.
- The project will include community and managed garden spaces for resource regeneration, composting opportunities and landscaping sustainability.
- A sustainability center will be developed, to promote waste reduction and other sustainable practices, and facilitate durable item reuse. The Sustainability Coordinator will provide education, reinforcement and follow-up to make sure the recycling program is being implemented properly.

F. Energy

GOAL: Minimize the island's electricity demand by reducing energy consumption and explore generating power on-site.

OBJECTIVES: The project should seek to reduce energy consumption and generate power through the following methods:

- Develop the electrical distribution system as a distributed energy system to enable all of the power need being met with local distributed generation systems.
- Install one centralized energy monitoring and reporting system for the entire development at the building level
- Exceed California Title 24 standards for all buildings by at least 20%
- Mandate for all buildings Energy Star appliances and equipment, premium efficiency motors, demand response capability, and LED for all lit signage
- Use high efficiency lighting strategies for walkways, streets, signage, and other outdoor lighting
- Design all outdoor lighting to protect the darkness of the night sky

- Perform a feasibility study of a district heating and/or cooling system that may utilize cogeneration and/or ground or water source heat pumps.
- Use active and passive solar energy systems to minimize demand for electricity and natural gas as well as generate electricity to the maximum amount feasible
- Enable and protect solar access through the design of streets, parcels, and buildings
- Perform a feasibility study on the viability of on-site generation of energy, with a goal of generating a minimum of 20% of Treasure Island's peak demand from on-site renewable energy sources
- With CCSF (including SF PUC), perform a feasibility and bird safety study of a wind farm to provide electric power for the development

Innovation **LEED-ND® Pilot Project**

GOAL: TICD shall become a member of USGBC, help to influence the development of a national rating system for neighborhood developments (LEED-ND®), and make application for the Treasure Island Development to become a LEED-ND Pilot Project. Pilot Project applications will be accepted in the first quarter of 2006, and a balloted rating system is projected for launch in 2007. This is an opportunity for TICD to obtain professional consulting expertise from leaders in the field, learn best practices from other pilot project developments and to help create the new national rating system. LEED Pilot Projects garner national and international attention as world leaders with innovative, cutting edge developments.

OBJECTIVES: The U.S. Green Building Council is developing a national standard for neighborhood design that integrates the principles of green building and smart growth. The goal of this partnership is to engage stakeholders across the country in establishing consensus-based standards for assessing the impacts of development projects using the rating framework of the LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ that has already become the national standard for high performance buildings.

Whereas other LEED products focus primarily on green building practices, with only a few credits regarding site selection, LEED for Neighborhood Developments (LEED-ND) would emphasize smart growth aspects of development while still incorporating a selection of the most important green building practices. The scope of what would be considered smart growth design would be guided by the Smart Growth Network's ten principles of smart growth, and would include density, proximity to transit, mixed use, mixed housing type, and pedestrian- and bicycle- friendly design. LEED-ND would then provide an objective basis on which to certify developments as smart growth. In short, LEED-ND would create a label, as well as a set of guidelines for decision-making, which could serve as a concrete signal of, and incentive for, better location, design, and construction of neighborhoods and buildings. Equally important, it will be a product that can be readily folded into USGBC's existing and successful efforts to market LEED to developers, consumers, and policymakers.

The existing LEED Rating System for New Commercial Construction (LEED-NC) has a proven track record of encouraging builders to utilize green building practices such as increasing energy and water efficiency and improving indoor air quality in buildings. LEED-ND can have a similarly positive effect on development trends to revitalize existing urban areas, decrease land consumption, decrease vehicle miles traveled, improve air quality, decrease polluted stormwater runoff, and build communities where people of a variety of income levels can coexist, and where jobs and services are accessible by foot or transit. The continued use of certain green building standards in LEED-ND will ensure that indoor air quality is healthier, that energy and water consumption decrease, and that the corresponding utility bills of tenants and residents decrease as well.

In addition to direct economic and quality-of-life benefits for consumers, the implementation of water and energy efficient technologies will ensure a more efficient use of infrastructure in urban areas, where water, sewer, and electric grid systems are likely to be overtaxed. For additional information on LEED-ND, contact the USGBC at leedinfo@usgbc.org

Costs and Benefits of Green Building and Sustainable Community Design

Some cost and benefit data is included in the above sections that refer to individual green building and sustainable community design strategies. However, true sustainable design is not so much a collection of technologies, as an integration of human development into natural ecosystems. This integration is most easily achieved through an integrated design process where all design professionals and project stakeholders set environmental goals and collaborate from the very beginning of the design. While there may indeed be some additional "soft costs" (upfront design costs) associated with this alternative to traditional design procedures, most truly integrated designs do not require additional capital costs to achieve high levels of environmental performance. These advanced designs result in large life-cycle savings in faster rent-up and sales, less turnover, happier and healthier tenants and more profitable owners with reduced operating costs and maintenance. The integrated design process allows for synergies and opportunities for cost savings among disciplines that cannot be achieved in a more linear process.

Please find the following reference for cost and benefit information included as an attachment to this document:

> *Report to Board of Supervisors Budget Analyst—Environment Code—Chapter 7—Resource Efficiency Requirements and Green Building Standards*, February 26, 2004, SF Environment

Additional Reference

> *The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force*, "finds that an upfront investment of less than two percent of construction costs yields life cycle savings of over ten times the initial investment."

- Final Report (Adobe* PDF, 3.1 MB)
- Executive Summary (Adobe PDF, 174 KB)

See Also:

- Actual Costs—Is Building Green Too Expensive?—*Building Green in a Black and White World. Section 2; Chapter 3; Part 3.*
- Building Green on a Budget—*Environmental Building News (EBN) Volume 8, No. 5 -- May 1999*
- Buildings and Life-Cycle Costing—*Canadian Building Digest*
- *Costing Green: A Comprehensive Cost Database and Budgeting Methodology*- (Adobe PDF, 268 KB) Lisa Fay Matthiessen and Peter Morris of Davis Langdon Adamson (DLA)
- Economic Benefits of Green Building Design—(Power Point presentation)
- General Services Agency LEED Cost Study-The report provides a review of both the hard cost and soft cost implications of achieving Certified, Silver, and Gold LEED ratings for two GSA building types, using GSA's established design standards as the point of comparison.
- Green Building Saves Money—*Wisconsin Green Building Alliance (WGBA)*
- *Managing the Cost of Green Buildings*--(Adobe PDF, 371 KB) Abstract (Adobe PDF, 215 KB)
- Sustainable Practices, Public Buildings, and Jobs—*Portland State University Publication*
- What Every State Executive Should Know About Sustainable Buildings—(Power Point presentation)

February 15, 2005

Treasure Island Sustainability Plan

Supporting Information: LEED Gold Standard

I. LEED Gold for Treasure Island

Gold is the valuable mineral after which Treasure Island is named. Treasure Island represents a unique opportunity to raise the bar above the minimum green building standard established for City projects. Its prime real estate location and visibility are unparalleled, and because of this, its ability to garner national and international attention is unbeatable. Attaining LEED Gold will make Treasure Island an exemplary project that the world will look to for inspiration. This is an opportunity of a lifetime to make a powerful statement that resonates with and supports the environmental values for which San Francisco is so well known. LEED Gold is that statement.

II. Key Definitions

“Green Building”

Green building and the integrated design process involve fundamental changes in the way new buildings are delivered to the marketplace. The biggest change in truly successful green buildings is implementing a multi-disciplinary, collaborative design process. This process, where “the whole is greater than the sum of its parts,” creates synergy among designers and technologies, and allows problems to be solved that could never be addressed in more traditional linear design and construction practices.

“Soft Costs”

Due to it’s relative newness in the industry, this integrated design process currently costs a little more in terms of “soft costs” and design fees because it requires more up-front education, communication and collaboration.

As designers become more familiar with the collaborative process, soft costs will become mainstream practice or “normal and customary.” As markets mature, specialized green building materials will become more readily available at lower cost. As the infrastructure for construction and demolition waste recycling becomes more developed, recycling costs decline and deconstruction becomes a profitable venture. Commissioning agents, once rare, are proliferating with a commensurate competitive pressure on pricing. All indicators point to less cost over time.

“Hard Costs”

Actual construction costs vary widely. Some studies show slight increases in these “hard costs,” while others show no correlation between green building and construction costs. These findings are detailed in this report.

As Treasure Island has a long build-out horizon, many of these economies will continue to normalize as the industry matures and as information and services proliferate.

III. LEED Marketplace

A. LEED Registered Projects in the United States

Nationwide, approximately 5% of all new construction startups are striving for LEED ratings. This is a significant percentage seeing that the LEED Rating System was only introduced to the market five years ago. There are currently over 1,700 LEED registered projects (Attachment #1).

B. LEED Registered Projects in California

California is leading the country with 271 LEED *registered* projects – with almost three times as many registered projects as the next state, Pennsylvania (See Attachment #2)! A contributing factor in California's numbers is the state's climate, which makes achieving energy credits somewhat easier than other climate zones. See Davis and Langdon attachment #5, p. 16 "Climate".

C. LEED Gold Certified Projects

As of December 8, 2004, there were 157 buildings nationwide that achieved a LEED certification (See Attachment #1). Of the 157 certified buildings, 49 are LEED Gold certified buildings (See Attachment #4). This is nearly one-third of all LEED certified projects, certainly not a small minority (see Attachment 3). Many of the listings have built-in links leading to additional project information.

D. LEED-ND Pilot Project acceptance

LEED-ND (Neighborhood Development) is currently in development as a US Green Building Council rating system to emphasize smart growth and new urbanism aspects of development while incorporating the most important green building practices. Pilot projects are an integral aspect of the development of all new rating systems by USGBC, and solicitations for LEED-ND pilot projects are scheduled for early 2006. Pilot projects will most likely be selected based on predetermined criteria including the project's potential for positively informing the development of the LEED-ND rating system and the likelihood that the project will successfully proceed through design and build-out. A goal of LEED Gold for all Treasure Island buildings would be a strong statement of commitment toward a sustainable community, and should enhance the project's acceptance as a pilot project. The LEED-ND rating system is projected to be finalized by early 2007.

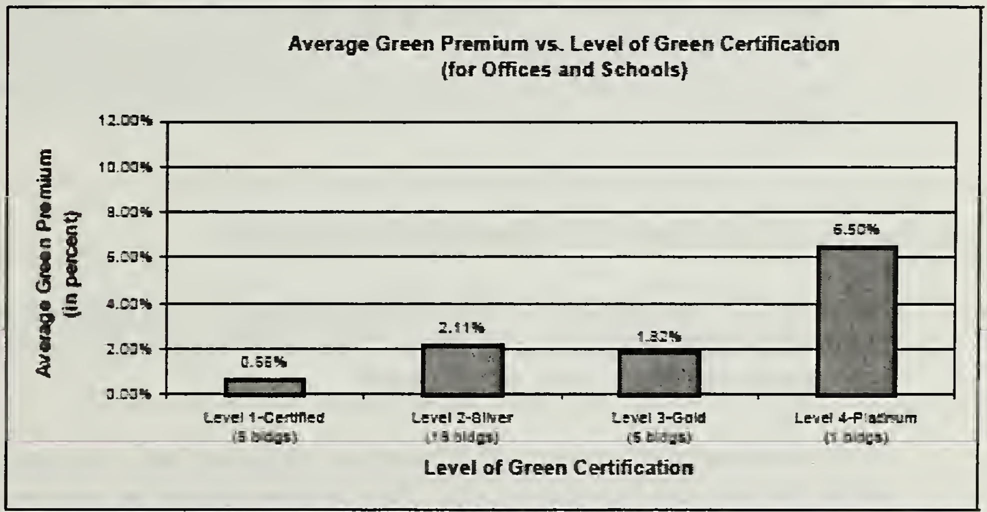
IV. Costs and Benefits of Green Building

Several reports regarding the costs and benefits of green building are annotated in the Treasure Island DRAFT Sustainability Plan. Two are analyzed here in more detail:

A. *The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force, Greg Katz, Principle E*

This landmark report analyzes 33 buildings in various climate zones across the United States and assigns a "green premium" to achieving various levels of LEED. The average reported cost premium for all 33 buildings is somewhat less than 2%. However, in looking at the "green premium" by rating level, the LEED Silver buildings (18) average 2.11% and the LEED Gold buildings (6) average 1.82%. Due to the smaller sample size of LEED Gold buildings, this number may not be statistically rigorous, however, it does show that based on the buildings analyzed, the average premium for achieving LEED Gold is less than the premium for LEED Silver.

Figure III-2. Average Green Cost Premium vs. Level of Green Certification



Source: USGBC, Capital E Analysis

B. *Costing Green: A Comprehensive Cost Database and Budgeting Methodology*- (Adobe PDF, 268 KB) Lisa Fay Matthiessen and Peter Morris of Davis Langdon Adamson (DLA)

This report analyzes 90 buildings by cost per square foot and the level of LEED rating. Excerpts including charts are attached to this report. Comparisons between LEED-seeking versus non-LEED shows that the cost per square foot for the LEED-seeking buildings was scattered throughout the range of costs for all building studied, with no apparent pattern to the distribution, i.e. there is no statistical correlation between the cost of these 90 buildings and whether or not they were seeking a LEED rating. Additionally, the distribution of the various

LEED ratings shows little correlation between level of LEED and building cost. There are LEED Gold buildings that are both more expensive and less expensive than non-LEED buildings. There are high cost and low cost LEED buildings. There are high cost and low cost non-LEED buildings. This conclusion supports the premise that it's more about setting goals (e.g. no additional building costs) and an effective integrated design process than it is paying extra for a collection of expensive technologies.

Conclusions also support the fact that the mild coastal climate of California reduces the cost of attaining LEED ratings. See Davis Langdon Attachment #5, p. 16, "Climate".

V. Budget Analyst Report on San Francisco's LEED Ordinance

In May 2004, the City and County of San Francisco established by ordinance that all new City buildings will achieve at a minimum a LEED Silver rating. Before this ordinance was adopted, the Budget Analyst for the Board of Supervisors determined that there would be no negative effect on the City's financial picture through this action. We believe that this would also be true at the Gold level, if the environmental and financial goals are set early in the process, and if there is buy-in from all parties involved. The City currently has four buildings registered for LEED Silver and one registered for LEED Platinum (California Academy of Sciences).

VI. Sustainable Development or Regenerative Development?

For some, "Sustainability is really just maintenance." To this, Bill McDonough asks: "How exciting is maintenance? Do we just want to maintain the status quo? Just keep things chugging along as they are?"

Most environmental actions are focused on being less bad. It's reductivism; reduce, reuse, recycle, use less energy, etc. The question should be: can we actually be 100% good, and not just be less bad? Instead of sustainable design, perhaps Restorative design or Regenerative design would be a more appropriate term. We *can* leave a positive environmental footprint. Buildings can now produce more energy than they need. They can produce oxygen and food; they can clean their own wastewater, they can be durable, and they can enhance people's lives—*if* there is buy-in and collaboration from all parties from the beginning of the process.

The economy is a wholly owned subsidiary of the environment, and if the environment is not restored and regenerated, the economy will never sustain itself.

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: July 26, 2005 **ITEM NO. 9**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Commission Secretary's Report July 26, 2005

☒ Confidential Phone List

☒ Strategic Plan 2004-2007

☒ Sunshine Ordinance Task Force Survey

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***This list reflects the explanatory documents provided.**

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEMORANDUM

DATE: July 26, 2005

TO: Commission on the Environment

FROM: Monica Fish, Commission Secretary

RE: Commission Secretary Report July 26, 2005 Meeting

COMMUNICATIONS AND CORRESPONDENCE

Hydrogen and Renewable Energy Committee

Building Management has reported that Room 421 is not available for the regularly scheduled meeting date of the first Wednesdays at 4:00 p.m. Conference Room 421 is available on the second and fourth Wednesday beginning at 4:30 p.m. or the second Monday at 4:30 p.m. An email will be sent to the Committee members asking for their selection of a meeting date. A bylaws change would have to be scheduled for the next Commission meeting to change the regularly scheduled meeting date.

Confidential Phone List

A request was made to provide the Commissioners with a **confidential** contact list for all Commissioners. A copy is at your station.

Strategic Plan

As requested at the Operations Committee Meeting of July 20, 2005, a copy of the 2004-2007 Strategic Plan is at your workstation.

Sunshine Ordinance Task Force Survey

The Sunshine Ordinance Task Force which monitors City/County agencies' and officials' compliance with the Ordinance is interested in obtaining feedback from departments/agencies/ Commissions regarding the Sunshine Ordinance for the purpose of possibly placing a series of amendments on a future citywide ballot and invites you to complete a survey. A survey copy is at your station or can be accessed at http://www.sfgov.org/site/sunshine_form.asp?id=31025. A copy of the request/web link to the survey form has been emailed to each Commissioner on July 18, 2005. The form may be completed online and submitted from the web-link.

2005 Good Government Guide

The 2005 Good Government Guide was mailed to the Commissioners in June. If you did not receive a copy, please let me know.

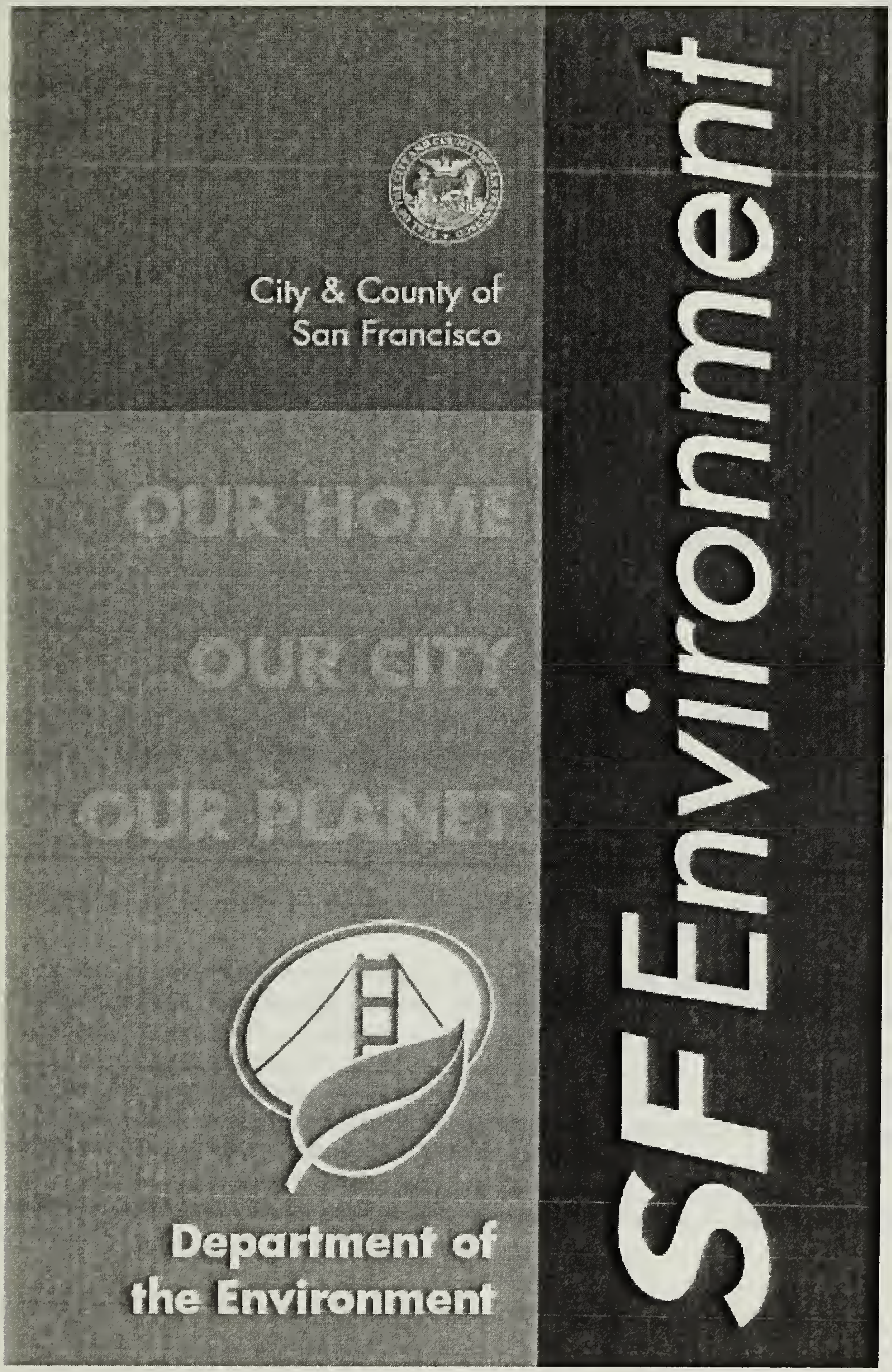
Commission Secretary Vacation

I will be on vacation from July 29 through August 19th. Ms. P.J. has agreed to provide backup that would include responding to inquiries and phone calls and routing phone messages and mail. She can be reached at (415) 355-3700.

PENDING CITY LEGISLATION

Urban Forest Council: Public Works Code - significant trees, landmark trees, and penalties for violations proposed legislation had been heard at the Board of Supervisors City Operations and Neighborhood Services Committee on June 13, 2005 and was "Continued to the Call of the Chair." It is not scheduled for another meeting as of to date.

SFEnvironment Strategic Plan 2004 - 2007



City & County of
San Francisco

OUR HOME

OUR CITY

OUR PLANET

Department of
the Environment

SFEnvironment

SF Environment

SEAL OF THE CITY AND COUNTY OF SAN FRANCISCO

GAVIN NEWSOM, Mayor

JARED BLUMENFELD
Director

SF ENVIRONMENT STRATEGIC PLAN

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8: Outreach ....

9: Administration ....

10: Urban Forest ....

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

SF ENVIRONMENT STRATEGIC PLAN

SF Environment's mission is to improve, enhance, and preserve the environment, and to promote San Francisco's long-term well being.

SF Environment does this by developing innovative, practical and wide-ranging environmental programs, fostering groundbreaking legislation, and educating the public by providing comprehensive and easily accessible information on a wide range of sustainable practices.

In addition to our historic function of providing environmental policy direction for the Mayor and Board of Supervisors, SF Environment delivers service programs for San Francisco residents and businesses including recycling, toxics reduction, environmental justice grants, and energy efficiency.

Some of SF Environment's ambitious – but deliverable – environmental goals include attaining 75 percent recycling by 2010, curbing San Francisco's greenhouse gas emissions to 20 percent below 1990 levels by 2012, and shutting down Hunters Point Power Plant by 2005.

SF Environment makes it easy for everyone in San Francisco to take care of their environment, and ultimately, the planet.

1: Environmental Justice Program

San Francisco's Environment Department (SF Environment) believes that every human being has the right to a healthy and safe environment. But in order to achieve this goal locally, our government, citizens, and businesses must work together to ensure that our air, water, soil, and food are of the highest possible standard in every community.

Environmental Justice (EJ) is the fair treatment and meaningful involvement of all people – regardless of race, ethnicity, income, or education level – in environmental decision-making. SF Environment's Environmental Justice Program promotes the protection of human health and the environment, empowerment via public participation, and the dissemination of relevant information to inform and educate affected communities so that all San Franciscans have an equal opportunity to lead healthy, fulfilling, and dignified lives.

Today there remain significant differences between the low level of environmental quality experienced by our poorest and most politically marginalized communities when compared to other residents. In 1998 Mayor Willie L. Brown Jr. secured $13 million in state funds for environmental justice initiatives in the Bayview, Hunters Point, and Potrero Hill neighborhoods, creating a historic opportunity to address some of these challenges.

SF Environment initiated a landmark grant program to administer these funds, which has given life to inspirational initiatives that can be viewed online at: www.sfenvironment.com. To date, the program has granted more than $9 million to community-based organizations and groups dedicated to providing energy and environmental services. The Department will continue to provide annual grants to support this initiative and develop projects in collaboration with community groups and City agencies to promote environmental justice in San Francisco.

GOAL #1	Provide financial, administrative and technical support to EJ communities in San Francisco, to address environmental, energy and public health concerns and help build community capacity and leadership.

Objective A: Administer EJ Grant Program and provide support to non-profit groups in Potrero and Bayview-Hunters Point neighborhoods of San Francisco

- Actions:

1. Continue to oversee SFE's EJ grant program (2004-07)
    a. Issue Request For Proposals, evaluate grant applications and provide awards for annual funding cycle (2004-07)

   b. Monitor over 25 grant contracts and perform financial and program review (2004-07)

2. Provide technical training and educational workshops to EJ grantees, non-profit groups and local residents to help develop their capacity and skills in program management and fiscal management (2004-2007)

Objective B: Develop and implement new initiatives to support EJ priorities in Potrero and Bayview-Hunters Point communities

- Actions:

3. Work with City agencies and community groups to develop a produce market or farmers market in the Bayview-Hunters Point community, to promote food security and economic development opportunities(2004-2005)

4. Continue to work with BAAQMD, CARB, City agencies and community groups to conduct an air monitoring program in the Bayview-Hunters Point community
   a. Collect and disseminate data generated by the Bayview-Hunters Point Community Air Monitoring Program (BayCAMP) (2004-2005)
   b. Work with SF PUC, BAAQMD and other stakeholders to identify elevated concentrations of toxic air contaminants ("hot spots") (2005-2006)

Objective C: Expand the EJ Program's outreach, educational and training activities

- Actions:

5. Work with SFE programs and community groups to provide educational and training services to multi-lingual and multicultural communities in San Francisco (2004-2007)
   a. Work with non-profit groups to perform effective outreach to Spanish-speaking residents in the Southeast area of San Francisco (2004-2007)
   b. Work with non-profit groups to perform effective outreach to Chinese-speaking residents in the Southeast area of San Francisco (2004-2007)

6. Work with non-profit organizations to organize and host a Clean Air Act workshop and EJ conference, inviting governmental agencies, EJ advocacy groups and community groups (2004)

7. Work with SFE's Pubic Outreach and Education program to develop the EJ Program's website, brochures, and educational materials (2004-2007)

GOAL #2	Work with City agencies to develop EJ policies and improve infrastructures to reduce and prevent disproportionate environmental burdens and adverse health risks.

Objective A: Work with City agencies to develop EJ policies and strategies

- Actions:

8. Organize a working group or task force to develop EJ legislation and integrate EJ goals and principles into the City's programs (2004-2007).
    a. Perform research on existing SF general plan, focusing on South Bayshoree plan
    b. Review the State of California's guidelines on integrating EJ principles into local general plans, develop a workplan and funding strategy (2004)
    c. Organize a working group to draft EJ legislation (2005)

9. Work with City agencies to identify an EJ liason for each department, develop policies and strategies and integrate EJ goals into City programs and services (2004-2007).

Objective B: Work with City agencies to improve infrastructure and reduce disproportionate environmental burdens in the Southeast area of San Francisco

- Actions:

10. Work with SFE's Energy program, SF PUC and community groups to implement the City's Electricity Resource Plan, promoting alternative energy and efficiency measures that would facilitate the shutdown of the PG&E's Hunters Point Power Plant (2004-07)
    a. Work with SF PUC during the site certification proceedings before the California Energy Commission regarding the SF Electric Reliability project (peaker project) (2004-2005)
    b. Work with SFE's Energy program to implement the Peak Energy Program (2004)

11. Work with SFE's Clean Air and Recycling programs, City agencies and community groups to reduce diesel emissions and improve traffic

circulation in the Bayview-Hunters Point and Potrero communities (2004-2007)

  a. Work with SF DPW in its environmental review of traffic circulation in Hunters Point, including new routes for truck traffic to the Hunters Point Shipyard (2004 - 2007)
  b. Work with SF Port Commission to establish and implement mitigation measures to control emissions generated by commercial recycling facilities in the Southeast Waterfront area (2004 - 2007)

12. Work with City agencies and community groups to develop a plan and strategies for improving the Southeast Wastewater Treatment Facility (2004-06)

GOAL #3	Promote economic development and employment and training opportunities for low-income residents in the EJ communities of San Francisco

Objective A: Work with SFE programs, City agencies and community groups to develop employment and training opportunities in the energy and food industries

- Actions:

13. Assist SFE Energy program in developing employment and training opportunities for the Generation Solar and Peak Energy Program (2004).

14. Assist participants of the EJ grantees' job training programs in securing meaningful, long-term employment (2004-2007)

GOAL #4	Develop fundraising strategy to sustain and expand SFE's Environmental Justice Program

Objective A: Develop funding strategy to sustain and expand the EJ program long-term

- Actions:

15. Identify strategies and funding opportunities to generate annual revenues for EJ program.

2: Energy

SF Environment has already made strides in attaining its energy efficiency and emissions reductions goals. The innovative Power Savers Program – the first municipal program ever to win the EPA Energy Star Award – has retrofitted the lighting in 4,000 hard-to-reach small business, resulting in a energy savings totaling 6 Megawatts, and keeping more than 15 million pounds of CO_2 out of the atmosphere. SF Environment was also instrumental in developing the City's recently adopted Electricity Resource Plan, a blueprint for attaining energy sustainability while meeting State-mandated energy reliability requirements.

GOAL #1	**To assist in closing the Hunters Point Power Plant, reduce citywide commercial electricity peak usage by 30 megawatts**

- ACTIONS:

1. Introduce local energy ordinances for existing buildings and new construction to require maintenance training and installation of efficient equipment and controls (04)
2. Implement enforcement systems for local energy ordinances (04-05)
3. Market energy efficiency programs including a special focus on lighting retrofit and controls (04-07)
4. Promote real time pricing tariff (based on time of use for electricity, especially during peak hours) for buildings over 200kW (04-05)
5. Explore Community Aggregation of energy efficiency options based on California Public Utilities Commission rules to implement all future programs (04-06)
6. Coordinate with community-based organizations to support demand reduction programs program (04-07)

GOAL #2	**Reduce residential energy use by 2 megawatts of electricity and .5 million therms of natural gas, in 10,000 dwellings**

- ACTIONS:

7. Identify residential buildings with high energy use and recommend appropriate efficiency measures (04-05)
8. Develop a group discount and replace 2000 refrigerators(04-07)
9. Conduct a citywide public education program including presenstations at neighborhood meetings (04)

10. Publicize energy consumption and savings by neighborhood (04-07)
11. Train contractors to test and retrofit residential buildings (04-07)
12. Introduce legislation to improve the Residential Energy Conservation Ordinance (04)
13. Introduce a new ordinance to increase efficiency of new residential construction or major renovations (04)

GOAL #3	**Install 3 megawatts of private sector solar photovoltaic systems and 12 megawatts of private sector fuel cell and other distributed generation systems**

▸ ACTIONS:

14. Promote streamlined permitting and interconnection of distributed generation and fuel cell systems and streamline web-based permitting for solar thermal and photovoltaic systems (04-05)
15. Launch Generation Solar pilot program to assist with 100 residential or commercial PV installations; encourage the creation of a self-sustaining program. (04)
16. Develop at least one pilot project for an advanced renewable technology (tidal, wave, urban wind) application in San Francisco (04-05)
17. Public recognition for Generation Solar participants and other early-adopters of PV and co-generation (04)
18. Distribute information in the form on instructional videos on PV installations to libraries and local video stores (04)
19. Publicize green power production by specific neighborhood (05-06)

3: Clean Air

The Department of Environment's Clean Air Program (CAP), formerly known as the City Employees' Commute Assistance Program (CECAP), has been providing commute assistance to the employees of the City and County of San Francisco and promoting the use of transportation alternatives since 1993. The primary goal of all CAP projects is to reduce vehicle emissions in order to improve air quality, by either reducing vehicle trips or promoting the use of clean fuels. CAP has received numerous awards for projects that often serve as models for similar efforts across the nation. To date, CAP has raised a total of $10 to $12 million dollars in grant funds to support clean air projects and programs.

GOAL #1 Improve air quality by reducing air emissions, focusing primarily on automobile emissions

Objective A: Set an example as the largest employer in San Francisco by providing model commute assistance programs and information to City and County employees to encourage commuting by alternative modes.

Actions:

1- Provide commute assistance information to City employees by maintaining an intranet web site and distributing information about commute alternatives to City employees. (2004 – ongoing)
2- Administer and promote the Commuter Benefit Program, providing an incentive for employees to take transit or vanpools. (2004 – ongoing)
3- Operate a peak-hour commuter shuttle for employees at the Hall of Justice (on-going). (2004 – ongoing)
4- Manage the City Hall Bike Room, providing secure bicycle storage, lockers, and showers for bicycle commuters in the Civic Center area. (2004 – ongoing)
5- Implement an employee transportation survey to assess baseline conditions and identify opportunities for new programs to increase the use of alternative modes among city employees. (2004)

Objective B: Administer programs to promote the use of alternative modes to other employers and residents in San Francisco.

Actions:

6- Promote wider use of pre-tax commuter benefits in the community by conducting a marketing campaign, with advertising on Muni, articles in newspapers, creation of an informational website, etc. (2004)
7- Develop and manage a countywide Emergency Ride Home Program to support commuters using alternative modes. (2004 – ongoing)
8- Work with the Department of Parking and Traffic, the San Francisco Bicycle Coalition, and others to promote and encourage bicycling in the community, including assisting with the annual Bike to Work Day event, and helping to coordinate construction of the new Caltrain Bike Station. (2004 – ongoing)
9- Develop a School Pool program to facilitate carpooling, bikepooling, and walkpooling to school to help ease traffic congestion around area schools and reduce vehicle emissions.
10- Maintain a website with information about alternative modes and assist in the efforts of other groups in the community to reduce vehicle trips. (2004 – ongoing)
11- Support the efforts of other groups in the community to promote and encourage the use of alternative modes in San Francisco, such as Car Free Day, Spare the Air, Rideshare Week, and events sponsored by the TMA, RIDES for Bay Area Commuters, and the ACT, Northern California Chapter. (2004 – ongoing)

Objective C: Reduce vehicle emissions in City operations, implement the Healthy Air and Smog Prevention Ordinance (Chapter 4 of the City's Environmental Code), and promote the use of advanced transportation technology in other sectors.

Actions:

12- Consolidate City fleets into vehicle pools to encourage carpooling. (2004 – ongoing)
13- Administer grant program to substitute bicycles for motor vehicles in the City's fleet in appropriate departments. (2004)
14- Work with the City's Green Fleets Team to develop vehicle procurement guidelines, process vehicle exemptions for City departments, and obtain grants to purchase alternative fuel vehicles. (2004 – ongoing)
15- Retire older and highly polluting vehicles and equipment that have been in service for twelve (12) years or more. (2004 – ongoing)
16- Continue developing fueling infrastructure for advanced transportation technology vehicles for the City's fleet and public access. (2004 – ongoing)
17- Continue converting the City's diesel refuse truck fleet (Norcal) to LNG. (2004 – ongoing)
18- Develop a taxi fleet efficiencies project for San Francisco/San Mateo Counties promoting clean fuel vehicles serving the San Francisco Airport. (2004 – ongoing)
19- Continue building partnerships with City departments and private sector entities to develop a regional fleet-based emissions reduction project. (2004 – ongoing)
20- Implement a hydrogen fuel cell demonstration project. (2004 – ongoing)

Objective D: Support Department's Environmental Justice goals by reducing emissions from non-mobile sources in communities of concern.

Actions:

21- Initiate an air quality monitoring project in the Bayview Hunters Point Community to gather baseline data and assess health impacts.
    a. Coordinate partnerships between the City, community and government organizations to install monitoring equipment; conduct monitoring activities, and analyze data. (2004 – 2005)
    b. Develop a "state of the air" report showing any trends or significant findings and distribute the report to all applicable agencies and organizations for future policy development. (2004 – 2006)

4: Zero Waste

San Francisco is over half way to zero waste. In 2003, the San Francisco Commission on the Environment and Board of Supervisors adopted nation-leading goals of 75% landfill diversion by 2010 and zero waste by 2020. San Francisco increased its diversion rate from 52% to 63% in CY 2002, exceeding the 60% goal SFE set for CY 2005 in last year's strategic plan. Residential

Fantastic 3 composting and recycling, and commercial composting increased diversion to about 55%. Exceptional construction and demolition debris recovery made up most of the remainder of the dramatic increase and should not be counted on each year in the future.

The Fantastic 3 rollout was completed in February 2004. About 2,000 businesses are now participating in the composting collection program. In 2003, SFE conducted waste audits at over 170 City department locations, identifying recycling and composting opportunities as well as significant cost savings. The San Francisco Fire Department became the first in the country to compost food scraps at all stations. The Board of Supervisors adopted a resolution urging City departments to compost more and the School Board adopted a goal of 85% diversion.

The plan below outlines our strategy to achieve 65% overall diversion by CY 2006. Central to this effort are City government leading by example, continuing to rollout innovative food scrap composting and commingled recycling programs to the commercial and residential sectors, and encouraging producer and consumer responsibility.

GOAL #1	Increase waste prevention and overall landfill diversion from 55% to more than 65% by CY 2006.

Objective A: Increase residential diversion from an estimated 40% to more than 50% by CY 2006.

- ACTIONS:

1. Increase residential waste prevention by working with the Outreach team and other organizations to promote consuming less, a junk mail reduction campaign and neighborhood reuse programs (04/05-06/07).
2. Award and manage grants to projects that create or maintain critical reuse and other diversion (04/05-06/07).
3. Implement recycling and composting collection wherever possible in challenging remaining large apartment and space-restricted buildings, downtown areas and supportive housing facilities (04/05-05/06).
4. Work with the Apartment Association, and Environmental Justice and Outreach teams to assure that residents have access to and are aware of waste diversion programs (04/05-05/06).
5. Develop markets and add items such as plastic bags to recycling programs and additional materials to composting collection (04/05-05/06).
6. Work with the Outreach team to promote buying recycled and the availability of certified compostable products such compostable bags and food service ware (04/05-06/07).

7. Increase residential composting by 20% and residential recycling by 10% (by 06/07).

8. Work with the Norcal companies and the Outreach team to keep residential recycling residuals below 10%(04/05-06/07).

9. Achieve close to zero waste at more high-profile special events and improve event permit requirements for diversion (04/05).

Objective B: Increase commercial diversion from an estimated 60% to more than 70% by CY 2006.

- ACTIONS:

10. Work with the Outreach team and conduct trainings to increase commercial waste prevention such as duplexing (04/05-06/07).

11. Promote participation in programs that maximize diversion by generator sector (e.g., rollout dual desk-side recycling program to office buildings, hotel diversion programs including guestroom recycling, and increase food service participation in composting program) (04/05-06/07).

12. Collaborate with associations (e.g., BOMA, Golden Gate Restaurant Association and Hotel Council), janitorial companies and unions, service providers, the Outreach team and others to target and incentivize increased diversion at office buildings, hotels, food establishments, retail complexes and other businesses, including conducting waste audits and providing technical and material assistance (04/05-06/07).

13. Develop markets to add materials such as plastic bags to recycling programs and additional materials to composting collection (04/05-05/06).

14. Work with the Outreach team to promote buying recycled (e.g., paper) and the availability of certified compostable products such compostable bags and food service ware (04/05-06/07).

15. Promote increased construction and demolition (C&D) debris diversion, implement proposed C&D recovery ordinance if passed, and continue planning disaster debris diversion with other agencies (04/05-06/07).

16. Work to ensure maximum utilization of recyclables, C&D debris and organics processing facilities during economic expansion, evaluate new technologies to maximize beneficial use and work with the Norcal companies to keep residuals below rate targets (04/05-05/06).

17. Meet commercial recycling and composting program rollout tonnage goals per 5-year rate plan and ensure that diversion programs are delivered with refuse service as economy rebounds (04/05-05/06).

18. Work with the Environmental Justice, Clean Air and Energy teams and others to support local processing and markets benefiting the host community, including designating and greening Piers 92-96, that currently house critical diversion facilities, into an Eco-Industrial Park (04/05-06/07).

Objective C: Increase City government diversion from an estimated 40% to more than 50% by CY 2006 and minimize purchases of products made from virgin materials or not recyclable or compostable.

▸ ACTIONS:

19. Increase City government waste prevention by encouraging electronic distribution of forms and information, and duplexing (04/05-06/07).

20. Conduct waste audits of City departments, provide training and other assistance, collaborate with service providers, custodians and others, and evaluate Resource Conservation Ordinance compliance (04/05-06/07).

21. Target the largest 20 percent of City waste generators and make site-specific diversion improvements (04/05-05/06).

22. Collaborate with Public Works and other departments to increase C&D debris diversion and utilization in projects (04/05-06/07).

23. Assist City departments in complying with the City Composting Resolution (04/05-06/07).

24. Develop improved diversion incentives such as managing a departmental billing system and providing composting service at no charge (04/05-05/06).

25. Identify additional reusable, recyclable and compostable products with recycled content, and work with Purchasing to direct purchases to such alternatives and evaluate buying recycled progress (04/05-06/07).

GOAL #2	Institute the next wave of generator and service provider incentives, and funding for diversion programs.

Objective A: Provide improved diversion incentives and programs through the next rate review process.

- ACTIONS:

26. Work with the Norcal companies and others to prepare for the next rate review (04/05-05/06).

27. Work with Public Works and others to conduct the rate review process (05/06).

GOAL #3	Require increased producer and consumer responsibility.

Objective A: **Encourage residents, employees, building managers and janitors that are not sufficiently motivated by education and financial incentives to participate in diversion programs.**

- ACTIONS:

28. Work to pass local legislation mandating participation in diversion programs in all sectors (i.e., City government, residential and commercial) (04/05-06/07).

Objective B: **Decrease use of problem disposable products, increase recyclability, compostability and recycled content of selected product types, and secure producer participation and/or funding to collect and divert their products from landfill.**

- ACTIONS:

29. Work to pass local and state policies targeting bags, cups and other food service packaging (04/05-06/07).

30. Recommend additional product types for producer responsibility action (04/05-06/07).

GOAL #4	Showcase SFE's zero waste programs and policies.

Objective A: **Continue demonstrating innovative programs such as food composting, and policies such as zero waste, and assisting progress around the world.**

- ACTIONS:

31. Work with recycling trade associations to host the National Recycling Coalition Congress & Exposition in San Francisco August 2004 (04-05).

5: Toxics Reduction Program

The Toxics Reduction Program seeks to improve the quality of human health and the environment in San Francisco by providing information and services to San Francisco residents, businesses and City agencies to reduce the use of toxic chemicals and properly manage hazardous waste. The program also administers a wide-range of hazardous waste collection services for spent or leftover household products including batteries, paint, pesticides, computers, motor oil, and mercury thermometers.

In 2003, SF Environment collected more than 1 million pounds of hazardous waste from San Francisco residents and small businesses, of which approximately 88 % was recycled, recovered, or reused. SF Environment served more than 600 businesses through the small business hazardous waste drop-off program, and 12,000 residents through other targeted hazardous waste collection programs. Hundreds more used the various drop-off programs for batteries, used motor oil, latex paint, and needles.

The Department coordinates a mercury thermometer exchange program in partnership with UCSF, Sanitary Fill Company, and also offers an exchange at the office location. Residents can bring in their old mercury containing thermometers and receive a free digital thermometer in exchange. In the first year of collection, these sites collected a total of over 5000 mercury-thermometers; preventing approximately 2500 grams of mercury from contaminating the environment. . The Department is exploring opportunities to provide mercury-thermometer exchange sites at the City's health clinics.

The Department's Less-toxic Pest Management Program and its Environmentally Preferable Purchasing Program set the standard for municipal toxics reduction programs nationwide. San Francisco has eliminated the use of the most toxic pesticides in city parks and buildings and has decreased it's over all pesticide use by over 50%. City gardeners regularly use non-chemical methods to control weeds and encourage plant health such as green flamers, compost tea, goats, mulch, and weed cloth. City janitors and mechanics also protect their health and the environment by choosing less toxic products to clean offices, clean and repair engine parts, and maintain buildings.

The Toxics Reduction Program works closely with other City agencies to encourage San Francisco businesses to similarly decrease their use of products containing toxic chemicals. Incentives, grants, audits, technical assistance, and special waste collection programs are all offered to businesses and City agencies to promote the use of safer products and practices.

GOAL #1	Protect the health of San Francisco residents by ensuring the proper use and disposal of toxic household products and promoting the use of less toxic products and practices.

Objective A: Address human health and environmental impacts and concerns of specific San Francisco communities by promoting the use of appropriate alternative products and practices.

- ACTIONS:

1. Facilitate focus groups to determine neighborhood specific environmental impacts and concerns in Environmental Justice and underserved communities. Develop appropriate materials and programs to reduce impacts of identified toxic chemicals used by residents in these communities. 2004-2007.
2. Broaden the focus of the Integrated Pest Management program to reach San Francisco residents with special focus on Chinese community and housing authority. Partner with PUC in promoting the Integrated Pest Management Partnership. 2004-2006.
3. Increase toxics reduction content in environmental education programs through field trips, teacher trainings, take-home materials and school/PTA newsletters. 2004-2007.
4. Identify environmental issues of concern for San Francisco seniors—a population particularly vulnerable to environmental toxins—through focus groups and partnership with local senior citizen services and organizations. 2004-2005.
5. Develop outreach materials and implement additional toxics reduction programs targeting San Francisco seniors based on focus group input. 2004-2006.

Objective B: Decrease residential exposure to and use citywide of products containing mercury or arsenic or other chemicals that are commonly used and are classified as persistent, bioaccumulative and toxic.

- ACTIONS:

6. Develop campaigns to help residents identify household products that contain mercury and arsenic such as thermostats and pressure treated wood and increase the availability of safer alternatives. 2004-2007.
7. Work with the Department of Health to expand mercury thermometer collection sites to two additional communities with particular emphasis on environmental justice communities. Increase collection and exchange of mercury fever thermometers by 20% over 2002/2003 levels. 2004-2005.
8. Develop a candidate list of high priority endocrine disruptors and identify products that contain them. Develop fact sheets to promote public awareness. 2004-2007.

Objective C: Maintain and enhance existing hazardous waste collection programs for residents and small businesses.

- ACTIONS:

9. Increase awareness about the hazardous nature of electronic products used by residents and small businesses. 2004-2005

7. Quantify participation of small businesses participating in the Conditionally Exempt Small Quantity Generator (CESQG) program and identify gaps in participation. Develop outreach program targeting those low participation industries. 2004-2005.

8. Increase participation in used oil collection program by 9% with special focus on underserved communities. 2004-2007.

9. Oversee regulatory compliance at household hazardous waste collection sites including the Permanent Household Hazardous Waste Collection Facility and local businesses serving as collection points for batteries, florescent bulbs, used oil, and paint. 2004-2007.

10. Work with Sanitary Fill Company to construct a "bulking room" at the Household Hazardous Waste Collection Facility to improve worker safety.2004-2005.

11. Provide training to staff of local businesses serving as collection sites on the proper handling of batteries, paint and fluorescent bulbs. 2004-2007.

12. Maintain contract for door-to-door collection of household hazardous waste at residential homes and small businesses. 2004-2007.

13. Develop campaigns to increase the proper disposal of batteries by 10%. 2004-2006

14. Measure baseline collection data and develop campaigns to increase the recycling of fluorescent bulbs containing mercury at the 10 collection sites set up across the City. 2004-2006.

15. As part of an overall Toxics Reduction outreach campaign, work with retailers to place information on proper hazardous waste disposal at the point of purchase. 2004-2007.

16. Improve access for all San Francisco residents to used oil collection centers and enroll additional collection centers if necessary. 2004-2007.

17. Coordinate collection of electronic waste in accordance with new regulations and funding opportunities put in place by SB 20. 2004-2007.

18. Identify and apply for funds to increase hazardous waste collection opportunities. 2004-2007.

GOAL #2	Protect the health of City workers and the public by facilitating the use of environmentally preferable products in City operations, and by implementing relevant City ordinances.

Objective A: Increase the use of environmentally preferable products by City departments by developing approved product lists, educating end users and supporting pilot programs.

- ACTIONS:

19. Implement two additional pilot projects demonstrating non-chemical methods for controlling pests 2004-2005
20. Increase the use of re-refined oil in vehicle fleets of City Departments by 5%. 2003-2004
21. Encourage innovative toxics reduction programs in City Departments through training, grants and fact sheets. 2004-2007
22. Prepare and provide City Departments with a green catalogue of preferable products (e.g. solvents, disinfectants, furniture) 2003-2006.
23. Develop purchasing specifications for products containing persistent, bioaccumulative, and toxic constituents or byproducts including such chemicals as arsenic, mercury, dioxins, brominated flame retardants and other endocrine disruptors. 2004-2007.
24. Participate in statewide effort to coordinate development of product purchase specifications.
25. Provide oversight and assistance to City departments as required in specific local ordinances in order to ensure compliance with environmental mandates and goals. Relevant ordinances include:

    a. Integrated Pest Management
    b. Precautionary Purchasing (pending)
    c. Resource Conservation
    d. Resource Efficient Building
    e. Arsenic Treated Wood (pending)

GOAL #3	Minimize the environmental impacts of San Francisco businesses, with special emphasis on supporting and promoting the use of less toxic products and practices.

Objective A: Create an incentive for San Francisco businesses to reduce their use of toxic products by developing and coordinating a Green Business Program.

▸ ACTIONS:

26. Select one or two targeted sectors for pilot green business program. 2004-2005.
27. Develop comprehensive standards for green businesses and coordinate activities with regional Green Business program of the Association of Bay Area Governments. 2004-2007.

Objective B: **Decrease the use of chemicals classified as persistent, bio-accumulative and toxic, and promote best management practices.**

▸ ACTIONS:

28. Work with San Francisco hospitals to decrease use of mercury containing and dioxin producing products and services. 2004-2007.
29. Work with San Francisco Dentists and the Public Utilities Commission to reduce the discharge of mercury into the wastewater system. 2004-2007.
30. Promote alternatives to San Francisco businesses on the use of pressure treated wood containing arsenic. 2004-2005.
31. Work with SF Businesses to identify and decrease the use of products containing endocrine disruptors. 2004-2007.

GOAL #4	Protect human health and natural resources locally and globally by working with product manufacturers to reformulate products sold in San Francisco and fund the collection and recycling of unwanted products at the end of their serviceable life.

Objective A: **Work with manufacturers to identify alternatives to products containing persistent, bioaccumulative and toxic chemicals for San Francisco businesses and consumers.**

▸ ACTIONS:

32. Create a pilot project with City departments and San Francisco businesses who own or manage chemically treated wood utility poles to substitute non-wood alternatives when replacing old poles or installing new ones. (2004-2005)

Objective B: **Create consumer product take-back program where manufacturers pay to collect and recycle products containing hazardous chemicals.**

- ACTIONS:

33. Work with SF Environment's Recycling team to develop and implement extended producer/retailer responsibility programs for Universal Waste products such as electronics, batteries, and fluorescent lamps in San Francisco and statewide. 2004-2007.

6: Green Building Program

SF Environment's Green Building Program is charged with improving the environmental performance of buildings in San Francisco. Building construction is the largest single industry in the world, and traditional construction and operation of buildings consume 40 percent of the world's energy, 65 percent of all electricity, and 40 percent of all raw materials. Each year in the United States, building-related activities are responsible for 30 percent of the nation's carbon dioxide emissions, 40 percent of ozone pollution, and 35 percent of municipal solid waste.

The Green Building Program was initiated by the Board of Supervisors in 1999 through adoption of the Resource Efficient Building (REB) Ordinance. This established green building requirements for City buildings and construction projects, authorized an inter-departmental REB Task Force, initiated a green building training program for City design professionals, and designated 9 green building pilot projects.

These Green Building Pilot Projects have demonstrated that thoughtful planning and design decisions result in a significant cost savings to the City over the life of such facilities, and can improve the health and productivity of City employees and visitors. "Green Buildings" offer substantial long-term economic, health and environmental benefits to the citizens of San Francisco.

The advanced green building design for the new Laguna Honda Hospital is designed to provide natural lighting and ventilation, high levels of indoor air quality, a 75% diversion rate of construction and demolition waste materials from landfill, and will save the City over $7M in energy costs over the first ten years of operation. The New California Academy of Sciences museum will achieve a LEED Platinum rating, the highest performance level in the U.S. Green Building Council's national rating system.

An amendment to the Environment Code was adopted in 2004 to establish a green building standard of LEED Silver for all City construction projects. Additional initiatives include collaboration with the Department of Building Inspection to remove building code barriers to environmental performance, and the development of a residential green building program. The green building staff also advises and supports both the SF Unified School District and the SF Redevelopment Agency in the design of their numerous school and redevelopment projects.

GOAL #1	Enhance San Francisco's economic, environmental and social well-being by improving the environmental performance of buildings in the course of their design, construction, use and eventual deconstruction.

Objective A: **Municipal**—Institute Green Building standards for municipal design, construction and renovation projects.

- **ACTIONS:**

  1. Implement the LEED Silver Amendment to the Resource-Efficient Building Ordinance, Chapter 7 of the Environment Code. (FY04-07)
  2. Provide Green Building Training to 200 City Staff. (FY04-05)
  3. Facilitate and encourage 20 LEED trained City Staff to become LEED Accredited Professionals. (FY04-05)
  4. Develop and implement a program to identify, monitor, evaluate and report on green building elements of City construction projects. (FY04-07)
  5. Research, develop and introduce an ordinance requiring the use of certified wood products in all City construction projects. (FY04-06)

Objective B: **Residential**—Implement residential Green Building initiatives.

- **ACTIONS:**

  6. Provide educational, financial and technical tools to promote green building practices in market-rate and affordable housing projects. (FY04-07)

Objective C: **Commercial**—Implement commercial Green Building initiatives

- **ACTIONS:**

  7. Establish an inter-agency and community advisory group to advise and support Green Building initiatives with San Francisco Unified School District. (FY04-06)
  8. Advise and support Green Building initiatives with San Francisco Redevelopment Agency. (FY04-06)
  9. Continue Building Code revision process with Department of Building Inspection community groups to maximize incorporation of Green Building opportunities. (FY04-06)

Objective D: Outreach and Education—Develop and expand public awareness of Green Building benefits through outreach and education.

- **ACTIONS:**

  10. Integrate Green Building curriculum into SFE's School Education Program. (FY04-07)

  11. Research the feasibility of a healthy building education program for disadvantaged neighborhoods. (FY04-06)

  12. Encourage the development of Green Building job-training programs. (FY04-06)

7: School Education Program

The School Education Program of the Department of the Environment serves over 225 public and private schools in San Francisco by providing school wide assemblies, classroom presentations, field trips, teacher workshops, environmental education materials, technical assistance and other special projects. These efforts are part of the Education Program's mission to provide students and teachers with resources critical to analyzing their environment and creating positive behavior change.

GOAL #1	Promote behavioral change towards the environment among students and teachers, in order to create future environmental leaders.

Objective A: Provide interactive environmental education opportunities for students, such as school assemblies, class presentations, field trips, and service learning projects.

ACTIONS:

1. Staff and contractors personally visit schools and conduct 55 school wide assembly presentations by fiscal 05-06 reaching a total of approximately 25,000 students.
   a) Conduct 15 presentations in 03-04
   b) Conduct 20 presentations in 04-05
   c) Conduct 20 presentations in 05-06
2. Sponsor 300 field trips to the Transfer Station, Presidio Recycling Center, SCRAP, and SLUG/HANC gardens by fiscal 05-06
   a) Sponsor 100 field trips in 03-04

b) Sponsor 100 field trips in 04-05
c) Sponsor 100 field trips in 05-06

a. Present 300 in-class presentations by fiscal 05-06 as "pre-trip" requirement to attending the field trip, reaching 7,500 students.
a) Present to 100 classrooms in 03-04
b) Present to 100 classrooms in 04-05
c) Present to 100 classrooms in 05-06

Objective B: Prepare teachers to teach environmental curriculum that promotes behavioral change. Teacher training allows us to reach a larger audience of future environmental leaders

ACTIONS:

3. Coordinate 6 curriculum workshops for teachers by 05-06.
    a) Coordinate 2 workshops in 03-04
    b) Coordinate 2 workshops in 04-05
    c) Coordinate 2 workshops in 05-06

GOAL #2	Maximize garbage diversion in San Francisco schools and education centers. The Education Program will assist all schools, but will focus on elementary schools because the elementary school community is most receptive to our program.

Objective A: Increase amount of bottles, cans, and paper diverted from school waste streams

ACTIONS:

4. Staff will assist with implementing and/or improving recycling programs in 75 schools by providing educational opportunities, school recycling bins, technical assistance, and student trainings.
    a) Implement/improve 20 programs in 03-04
    b) Implement/improve 25 programs in 04-05
    c) Implement/improve 30 programs in 05-06
5. Work with waste hauler to set up system for hauler to report on diversion of individual schools.

Objective B: Increase amount of organic material diverted from school waste streams

ACTIONS:

6. Staff will work with schools and waste hauler to assist with implementing and/or improving organics collection programs in an additional 45 schools, for a total of 90 schools by fiscal 05-06.
    a) Implement/improve 15 programs in 03-04
    b) Implement/improve 15 programs in 04-05
    c) Implement/improve 15 programs in 05-06
7. Give school wide assemblies (see above) that teach the interconnectedness of nature and how recycling and composting can help protect the environment
8. Work with waste hauler to set up system for hauler to report on diversion of individual schools.

GOAL #3	Broaden scope of topic areas to include pollution prevention, environmental justice, energy conservation, and school gardens, in the resources offered by our program.

Objective A: Diversify the environmental topic areas covered by the school ed program in order to diversify the types of behavior change promoted.

ACTIONS:

9. Expand field trip program to include a new site such as a water treatment facility or solar energy tour.
    a) Identify new venues for field trips and coordinate a pilot field trip in 03-04.
    b) Send a minimum of 10 classes to new field trip site in 04-05.
    c) Send a minimum of 15 classes to new field trip site in 05-06.

10. Design and produce a children's website that will provide information about other program topics.
    a. Produce, design and launch website in 03-04
    b. Continue to develop website with online activities in new topic areas in 04-05
    c. Expand website to contain up to date information and activities on each topic area in 05-06

11. Expand educational offerings to include water pollution prevention presentations.

Objective B: Assist with developing school gardens programs and use school gardens as a means of promoting composting, food sustainability, and integrated pest management.

ACTIONS:

11. Collaborate with the San Francisco Green Schoolyard Alliance on various projects, attend meetings, and participate in conferences. (Ongoing)
12. Assist 10 schools by 05-06 with improving/creating school gardens

a) Assist 2 schools with identifying resources to create/improve gardens in 03-04
b) Assist 3 schools with identifying resources to create/improve gardens in 04-05
c) Assist 5 schools with identifying resources to create/improve gardens in 05-06
Research and develop garden lesson plans and activities to supplement garden programs.

8: Outreach Program

SF Environment's Public Outreach Program supports the goals and services of all Department programs by providing clear, concise, and objective information about the condition of San Francisco's environment to the public and policy-makers. SF Environment provides environmental educational resources to a wide variety of San Francisco constituencies, and strives to motivate every San Franciscan to act as good stewards of The City.

GOAL #1	Design and deliver outreach activities that will achieve the behavior-change goals of Department programs.

Objective A: Define priority constituents for Department program areas, including constituent needs (for both existing and potential constituents), to establish the foundation for targeting successful services and outreach activities.

- ACTIONS:

1. Establish target markets for Department program areas.
    a. Review new Department programs individually to identify heavy users, light users, and potential constituent bases to develop.
    b. Prioritize constituent groups within each program area.
    c. Review existing programs; adjust as needed.
    d. Review program performance to inform maintenance or expansion of program.
2. Identify best methods for reaching constituents.
3. On an ongoing basis, identify preferred media, outreach methods for each targeted constituent groups, including:
    a) Print media
    b) Electronic media
    c) Neighborhood meetings

        d) Phone banking
        e) Community event sponsorship
        f) Department-produced special event
        g) Website

4. Conduct research to verify assumptions and test market acceptance or outreach methods; modify or initiate new methods based on research.

Objective B: Promote Department programs in a manner that will advance the Department's goals, and identify the means for delivering program messages.

- ACTIONS:

5. Maintain positioning for Department programs by consistent use of imagery, and values-based identity.
6. Maintain distinctive graphic look that visually repackages Department to appeal to targeted constituent groups.
    a) Re-enforce use of customer-friendly *SF Environment* (SF Environment); drop "Department of" from name
        i. Maintain common graphic look and feel on all printed materials to build and reinforce new image
7. Work with Administration team to identify funding for EcoCenter
8. Create graphic excitement and informational value in EcoCenter
    a) Incorporate new graphic look into EcoCenter materials and displays
    b) Develop family friendly exhibits
    c) Environmental speakers
    d) Conduct sustained services to support programs
        a. Mercury thermometer collection
        b. Battery recycling
        c. Cell phone recycling
        d. Other as needed
9. Take EcoCenter concept to satellite locations
    a) Metreon
10. Update general presentations for use throughout year in speaking before constituent groups.

a) Video

b) Speaking script

c) Powerpoint

11. Develop new fact sheets on key issues, as necessary by program, and distributing to public, legislators, press, and key partners.
12. Initiate, maintain and review forums to share information and build consensus among critical players on substantive issues facing both The City's environment and program customers, including:

    a) Environmental Justice open house
    b) Neighborhood events, town hall meetings
    c) Senior centers
    d) Trade and neighborhood association meetings
    e) Investigate viability of online discussion forums, video on demand

13. Conduct focus group research to test market acceptance of new positioning, "look" and proposed outreach approaches to assure maximum success

    a) Before launching, present new positioning and imagery to employees to create pride, enthusiasm and buy-in, FY 03-04; re-check for effectiveness in FY 05-06.
    b) Brief critical grassroots constituents before launch to get their valued input and buy-in, FY 03-04; check progress with constituent groups in FY 05-06

Objective C: Maintain positioning by consistently applying key messages across all mediums and audiences.

- ACTIONS:

14. Develop key messages for Department's new positioning

    a) Aimed at all key audiences including employees, customers, voters, community leaders, legislators, other city departments, etc., to support

        i. New recycling options
        ii. Toxics reduction programs
        iii. Waste reduction programs
        iv. Energy/climate-related programs
        v. Transportation programs
        vi. Air monitoring programs

    b) Adaptable in all mediums including printed materials, PR, website, direct mail and advertising
    c) Adaptable into Spanish and Chinese

   d) Format, once established, will require fine tuning for specific audience applications

15. Train employees on how to deliver these messages.

16. Develop image-based "who we are" Department brochure to tell SF Environment's story of championship and broadened reach
    a) Also for general distribution

16. Create positioning kit for use in media briefings, press conferences and similar forums

    b) Update kit as needed
    c) Develop informational DVD with key video elements

17. Reinforce Department's leadership role through media

    a. Provide spokespersons and call press conferences as appropriate.
    b. Establish and reinforce media connections to gain coverage of Department programs.
    c. Develop media-only section for Website

18. Continue to feed consistent, focused and coordinated story ideas to media demonstrating SF Environment's increased leadership in areas of:

    a. Recycling
    b. Toxic materials reduction
    c. Energy planning and efficiency
    d. Environmental Justice
    e. Clean air
    f. Green building
    g. Climate change prevention
    h. Legislation through Commission, Board of Supervisors, and Mayor

19. Continue existing effective outreach programs that share SF Environment's expertise to program customer bases, general public, and legislators

    a. School education
    b. Media outreach
    c. Environmental services guide
    d. Neighborhood newspaper ads and columns
    e. Event sponsorship
    f. Maintain and expand foreign language materials, Websites

Objective D: Implement services and infrastructure to ensure that Program activities meet established Department goals.

- ACTIONS:

20. Build internal infrastructure to efficiently support successful programs

    a. Work with Admin to upgrade data base management to maximize program goals, and to leverage legislative efforts
    b. Continue to upgrade website usefulness and appeal as efficient way to reach growing customer base
    c. Expand web site to include Spanish and Chinese language materials

21. Discontinue program practices that do not achieve goals

    a. Eliminate duplication of effort and customer cross-over by consolidating materials
    b. Determine which materials can be incorporated into expanded general materials
    c. Wherever possible, adopt means to employ electronic communications solutions vs. paper-intensive ones

22. Seek partnerships where all partners gain greater effectiveness and improved efficiencies

    a. Meet with Department programs and potential community partners to understand commonality of missions, near-term agendas, human resources, constituents and assets in an effort
    b. Develop programs and partnerships that allow each to accomplish more with fewer resources
    c. Assign appropriate internal staff to work with Department programs and partner organizations to develop roles and working arrangements with those partnerships
    d. Collaboratively determine expectations and means of measuring success so programs and partnerships can be revisited at key milestones

23. Expand internal communications efforts so employees continue to be enthusiastic, supportive and knowledgeable about progress toward improving Department's program successes

    a. Use e-mail system to disseminate timely news and bulletins
    b. Update hotline to incorporate all Department programs, in a manner consistent with Department image and identity

    c. Use existing outlets to provide progress reports on Strategic Plan, recognize successes, discuss issues and address employee questions

24. Measure results in terms of gained effectiveness and improved cost-savings in order to determine advisability to continue as is, make adjustments or abandon effort.

Objective E: **Facilitate and maintain constructive relationship with elected officials to promote behavior change goals of Department programs.**

▸ ACTIONS:

25. Conduct regular briefings with key members of the Board of Supervisors and Mayor's staff.
    a. Involve Department program staff as needed
26. Train program staff to deal effectively, under supervision, with elected officials, including:
    a. Protocol
    b. Legislative process
27. Review and approve program staff communication with elected officials
28. Provide media and other necessary support related to Commission or Department-generated legislation being carried by elected officials

9: Administration

GOAL #1	Provide coordinated and comprehensive administrative support to program areas while providing for all the administrative needs for the Department.

Objective A: **Define priority constituents for Department program areas, including constituent needs (for both existing and potential constituents), to establish the foundation for targeting successful services and outreach activities.**

- ACTIONS:

1. Enhance annual budget and budget systems, including term budget planning and systems.
2. Improve the budget reporting mechanisms to the Commission and for program areas.
3. Streamline the processing systems for payables and receivables.

Objective B: **Provide comprehensive support to program areas in the areas of administrative processes such as requests for proposals (RFPs), contracts, grants, purchasing requirements and accept and expends.**

- ACTIONS:

4. Develop checklists, timelines and descriptive overviews for each administrative process.
5. Conduct regular trainings on administrative processes for new staff, and refresher trainings for other staff as processes change.
6. Develop streamlined internal purchasing and reimbursement procedures.

Objective C: **Provide personnel and payroll support for entire department, including payroll and processes to deal with workplace issues.**

- ACTIONS:

7. Update personnel manual, including all departmental procedures and relevant City procedures for staff.
8. Conduct regular seminars on areas of interest such as deferred compensation, City programs, procedures and benefits.
9. Facilitate administrative, human resource and other training for staff in Department.
10. Develop systems to ensure that all administrative procedures, such as performance reviews, are conducted in a timely manner.

Objective D: **Develop and implement systems for recruiting staff, including taking steps to ensure that diversity is always a prime consideration in recruiting.**

- ACTIONS:

11. Develop and regularly update a database for recruitment purposes.
12. Develop recruitment procedures that include expanded outreach options, including making outreach calls to increase diversity in the applicant pools.

Objective E: Provide office management services for department.

- ACTIONS:

13. Develop office management systems based on reduce, reuse and recycle principles, maximizing recycling content and less toxic materials.

Objective F: Provide fundraising services and support for department, including researching and writing grant proposals.

- ACTIONS:

14. Design departmental fundraising plan, matching program fiscal needs to a fundraising plan.
15. Develop relationships with foundations and agencies as needed to assist in fundraising for the department.
16. Track funding for department and city agencies as part of the fundraising plan.
17. Work with Friends of SFEnvironment to assist in the fundraising process (04-05)
18. Develop partnerships to further fundraising possibilities.

Objective G: Enhance computer and IT services for the Department.

- ACTIONS:

19. Develop a comprehensive department wide database, which will coordinate all our existing databases with Lotus Notes.
20. Transition as many written files as possible to electronic files, and reduce paper files as much as possible.
21. Convert forms and as many transactions as possible to electronic versions.

10: Urban Forest Program

The urban forest is a vital component of San Francisco's ecosystem. Trees positively affect public health and well being by improving air and water quality, increasing property values, reducing flooding, lowering building energy use and providing an experience of nature amidst expanses of concrete.
Currently, San Francisco is home to approximately 32,000 City maintained street trees and 60,000 privately maintained street trees. While this is a good start, most of these trees are not planted in some of our more impoverished neighborhoods and are not nearly enough to mitigate the effects of global warming and air pollution. It is estimated that one tree can sequester 100 pounds of CO2—an effect that is desperately needed throughout the City but particularly in neighborhoods like Bayview Hunters Point, the Mission and Chinatown. Statistics indicate that on a percentage basis, fewer trees per capita—half as many—have been planted in these environmentally distressed neighborhoods than in our more affluent communities.

Historically, any comprehensive planning or coordination of urban forest activities have been fragmented among various city, state and federal agencies, non-profit groups and private property owners. Together with inadequate program funding, the absence of coordinated management and planning has led to inconsistent maintenance and conservation efforts, insufficient enforcement of existing laws related to trees, loss of healthy and significant trees due to vandalism and disease, and limited public awareness of the importance of trees. Consequently, the community has been unable to realize the full extent of environmental and economic benefits that trees provide.

In 2001, The San Francisco Board of Supervisors passed the Urban Forest Council Ordinance. This legislation guides the stewardship of San Francisco's trees by creating a Council that will provide a unified and effective response to the challenges of tree management and its broader environmental implications in the City. Thoughtful planning of the Council can provide managing agencies and the public the information and direction needed to maximize critical Urban Forest services.

GOAL #1	Implement the Urban Forest Council Ordinance, facilitate the cooperative interaction of tree-related activities to promote a healthy and sustainable urban forest, and ensure that Urban Forestry practices are included in all Climate Protection activities.

Objective A: **Establish a long-term comprehensive Urban Forest Plan that sets policy for the management of the City's public and private trees and their role in mitigating climate change.**

- ACTIONS:

1. Develop the Plan in consultation with City agencies, community groups, non-profit agencies and members of the public.

2. Work with the Recreation and Park and Planning Departments to incorporate elements of the Urban Forest Plan into the City's General Plan.

3. Work with SF Environment's Climate Protection Division to ensure that tracking and reporting of quantifiable effects of tree-planting such carbon sequestration and pollution mitigation are included in the plan and registered with the EPA and the California Climate Action Registry.

4. Work with SF Environment's Environmental Justice Program to ensure that the plan specifically addresses includes Urban Forestry and management in underserved neighborhoods.

Objective B: Establish education and outreach programs on San Francisco's Urban Forest.

- ACTIONS:

5. Work with SF Environment's Outreach and Education staff to design education programs that promote public understanding of City tree programs and laws.

6. Work with the media to bring urban forest concerns and information to the public.

7. Facilitate presentations, programs, and other outreach to property owners and the business and corporate community.

8. Promote special events such as a citywide Arbor Day.

9. Promote an understanding of San Francisco's urban forest as habitat for the wild animals that make up a significant part of San Francisco's natural heritage.

10. Encourage public participation in urban forest projects and programs that include consideration of neighborhood interests.

11. Promote trees as essential infrastructure with inherent value to the City of San Francisco.

12. Develop and adopt guidelines for protecting trees during project design, engineering and construction of public and private development projects.

13. Work with various training programs to ensure that Urban Forestry is utilized as a viable tool in developing sources of employment and training for underserved populations.

Objective C : Ensure that adequate resources are available for San Francisco's Urban Forest

- ACTIONS:

14. Review and make funding recommendations to city officials.

15. Explore the potential for the establishment of a new assessment district, or other permanent source of tree specific funding.

16. Coordinate with agencies and organizations in securing funding for urban forest programs and set up systems to serve as a clearinghouse for grant related information.

17. Compile an annual city-wide tree management budget for local governmental agencies.

18. Partner with SF Environment's other programs to access Environmental Justice, Climate Change, and pollution prevention funds appropriate to increasing San Francisco's Urban Forest

Objective D : Establish an effective system for reporting on the state of the urban forest to the Board of Supervisors and the Mayor.

- ACTIONS:

19. Develop criteria to assess the success of public agencies and other urban forest managers in implementing the Urban Forest Plan.

20. Outline the condition of the urban forest, species composition, and other characteristics.

21. Summarize urban forestry activities, such as total number of trees, number of trees removed, and number of trees planted on private lands and under the jurisdictions of public agencies and non-profit organizations.

22. Summarize environmental effects of urban forest—estimates of pounds of CO2 kept out of the atmosphere and

23. Report on program adherence to the best management practices, public education and outreach projects, and funding status for San Francisco's Urban Forest.

Monica Fish/ENV/SFGOV
07/18/2005 11:32 AM

To COE Commissioners
cc
bcc
Subject Sunshine Ordinance Task Force Survey

Sunshine Ordinance Task Force Survey

The Sunshine Ordinance Task Force which monitors City/County agencies' and officials' compliance with the Ordinance is interested in obtaining feedback from departments/agencies/ Commissions regarding the Sunshine Ordinance for the purpose of possibly placing a series of amendments on a future citywide ballot and invites you to complete a survey. A survey copy can be accessed at http://www.sfgov.org/site/sunshine_form.asp?id=31025. The form may be completed online and submitted from the weblink. More instructions are on the weblink.

Monica Fish, Commission Secretary
Commission on the Environment
(415) 355-3709

Board of Supervisors

Sunshine Ordinance Task Force

Department Sunshine Ordinance Survey

The Sunshine Ordinance Task Force, which monitors City/County agencies' and officials' compliance with the Ordinance, is currently reviewing the Ordinance, and possibly toward placing a series of amendments on a future citywide ballot. Because of the recent Board of Supervisors' considerations of the Task Force proposed amendments, the Task Force is requesting input from City Departments and Boards and Commissions.

To develop the best possible set of amendments, the Task Force needs to hear the views of all interested parties, especially those whom the Ordinance affects. We strongly encourage you to respond to the questionnaire below and email or send to the Task Force at your earliest convenience.

If you wish to remain anonymous, please print the attached Survey Form, complete and send to Adele Destro, Interim Administrator, Sunshine Ordinance Task Force, City Hall Room 244.

Thank you for your kind attention.

Sincerely,
Doug Comstock
Chair, Sunshine Ordinance Task Force
Richard Knee
Chair, Sunshine Ordinance Task Force Compliance and Amendments Committee

The following are the provisions of the Sunshine Ordinance: You may access the ordinance by clicking on the following link: http://www.sfgov.org/site/sunshine_index.asp?id=4673

Article II: Public Access to Meetings

- Sec. 67.3. Definitions.
- Sec. 67.4. Passive Meetings.
- Sec. 67.5. Meetings to Be Open and Public; Application of Brown Act.
- Sec. 67.6. Conduct of Business; Time and Place for Meetings.
- Sec. 67.7. Agenda Requirements; Regular Meetings.
- Sec. 67.7-1. Public Notice Requirements.
- Sec. 67.8. Agenda Disclosures; Closed Sessions.
- Sec. 67.8-1. Additional Requirements for Closed Sessions.
- Sec. 67.9. Agendas and Related Materials: Public Records.
- Sec. 67.10. Closed Sessions: Permitted Topics.
- Sec. 67.11. Statement of Reasons for Closed Sessions.
- Sec. 67.12. Disclosure of Closed Session Discussions and Actions.
- Sec. 67.13. Barriers to Attendance Prohibited.
- Sec. 67.14. Tape Recording, Filming and Still Photography.
- Sec. 67.15. Public Testimony.
- Sec. 67.16. Minutes.
- Sec. 67.17. Public Comment by Members of Policy Bodies.

Article III: Public Information and Public Records

- Sec. 67.20. Definitions.
- Sec. 67.21. Process for Gaining Access to Public Records; Administrative Appeals.
- Sec. 67.21-1. Policy Regarding Use and Purchase of Computer Systems.
- Sec. 67.22. Release of Oral Public Information.
- Sec. 67.23. Public Review File--Policy Body Communications.
- Sec. 67.24. Public Information that Must Be Disclosed.
- Sec. 67.25. Immediacy of Response.
- Sec. 67.26. Withholding Kept to a Minimum.
- Sec. 67.27. Justification of Withholding.
- Sec. 67.28. Fees for Duplication.
- Sec. 67.29. Index to Records.
- Sec. 67.29-1. Records Survive Transition of Officials.
- Sec. 67.29-2. Internet Access/World Wide Web Minimum Standards.
- Sec. 67.29-3.
- Sec. 67.29-4. Lobbyist On Behalf of the City.
- Sec. 67.29-5. Calendars of Certain Officials.
- Sec. 67.29-6. Sources of Outside Funding.
- Sec. 67.29-7. Correspondence and Records Shall Be Maintained.

Article IV: Policy Implementation

- Sec. 67.30. The Sunshine Ordinance Task Force.
- Sec. 67.31. Responsibility for Administration.
- Sec. 67.32. Provision of Services to other Agencies; Sunshine Required.
- Sec. 67.33. Department Head Declaration.
- Sec. 67.34. Willful Failure Shall Be Official Misconduct.
- Sec. 67.35. Enforcement Provisions.
- Sec. 67.36. Sunshine Ordinance Supersedes Other Local Laws.

Using the list of provisions provided, please identify which provision(s) of the Ordinance have caused you difficulty. Include the Admin Code number of each; a description of the problem(s) it has caused; and how it could be amended or eliminated to achieve remedy.

You can also download and print the Survey Form (PDF) and mail or fax it to the Sunshine Ordinance Task Force.

Admin Code Section	Description of Problem	Amended or eliminated to achieve remedy (describe amendment)

Please identify which provision(s) of the Ordinance have proven useful but which still need improvement. Include the Admin Code number of each; a description of its benefit(s); and how it could be improved.

Admin Code Section	Description of Benefit(s)	How can it be improved

---

Please identify which provision(s) of the Ordinance have proven useful and should not be revised or eliminated. Include the Admin Code number, and a description of its benefit(s).

Admin Code Section	Description of Benefit(s) (not revised or eliminated)

Please discuss any relevant issues that the foregoing does not address.

This form has been completed by: (optional)

Department: (optional)

Thank you for your participation!

Submit Form Clear Form

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: July 26, 2005 **ITEM NO. 13**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Director's Report

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***This list reflects the explanatory documents provided.**

DEPARTMENT OF THE ENVIRONMENT
CITY AND COUNTY OF SAN FRANCISCO

To: Commissioners, Commission on the Environment
From: Jared Blumenfeld, Director
Re: Monthly Report: April – July 2005
Date: July 26, 2005

ADMINISTRATION/GENERAL

The World Environment Day celebration on June 1-5, 2005 was a huge success. The event was attended by local and international mayors, delegates and the general public, with Governor Arnold Schwarzenegger kicking off the event on June 1st by announcing the state's green house gas emission targets and culminating with House Democratic Leader Nancy Pelosi delivering the closing remarks on June 5th. To date, 54 mayors have positively pledged their support of the Urban Environmental Accords, with more cities expected to sign on. SFE is sending out follow-up Accords correspondence with all the mayors who were invited to the event.

The department hired Christine Domingo as new Recycling Associate who will oversee the City's virtual warehouse of surplus furniture/equipment, and Grace Ma, new 9922 Urban Forest Associate. The department is recruiting for one 9920 School Education Associate, one 9922 Green Building Associate, and one 5640 Climate Coordinator.

The Board of Supervisors approved the department's budget of $10.827M for fiscal year 2005-2006, which represents a 14% reduction from last year's budget. The large reduction in grant support for the Clean Air program accounted for this year's smaller SFE budget.

ENERGY

Planning and Funding:

- Scheduling follow-up meeting on SF Housing energy use.
- Presenting overview of draft plan for Community Choice Aggregation.
- Participating in planning meetings for the 2006-08 program year.
- PG&E has tentatively agreed to extend our PEP contract through next year and develop a new contract for 2006-08.

Peak Energy Program:

- PEP has met 62% of peak reduction goal.
- We are concluding most program activities and designing some new ones for the small and medium commercial sector.

11 Grove Street, SAN FRANCISCO, CALIFORNIA 94102
WWW.SFENVIRONMENT.COM
TELEPHONE (415) 355-3700 FAX (415) 554-6393 E-MAIL: ENVIRONMENT@SFGOV.ORG

- Staff engineers are now conducting inspections of installed projects.
- New focus on refrigerator gaskets was highly successful, yet our staff discovered an error showing that savings were over estimated. Savings are being recalculated.
- Exchanged almost 300 old neon "open" signs for LED in small businesses combined with energy survey.

Legislative Initiatives: No action.

Renewables:

- Generation Solar: 300 leads. Six installers have had their drawings approved for the fast track permit.
- Tidal: no action
- Wave: SFE/PGE partnership MOU is ready to start the approval process.
- Wind: a new design has been identified

CLEAN AIR PROGRAM

1. Clean Air Program was awarded transportation demand management grants totaling $240,000 from Prop. K, (SF County Transportation Authority) and the Transportation Fund for Clean Air (BAAQMD).

2. CAP staff received $350,000 to pay for retrofit work to reduce emissions on Norcal refuse trucks..

3. A contract was finally awarded to build a new Recreations and Parks Department CNG fueling site new Kezar Stadium.

4. Responding to pressures from Clean Air Program staff and a coalition of community groups, the San Francisco Unified School District finally moved to require that new buses be used in the new contract that has just been signed with Laidlaw. This will significantly reduce emissions.

5. The City and County of San Francisco received top honors at the International Electric Vehicle Symposium in Europe (April, 2005) for having the best municipal clean air (and zero emission) transportation program in the Americas. (North and South).

6. Due to insufficient funding, Clean Air Program Manager Rick Ruvolo will leave the department effective August 31, 2005.

ENVIRONMENTAL JUSTICE

Independent evaluation of the Environmental Justice (EJ) program: We received 7 applications in response to the Request for Proposals (RFP) for an independent evaluation of the EJ grant program. Based on an in-depth evaluation and interview process, we selected Tech Law as the contractor and expect this project to start within two weeks, by early August 2005. We are processing the $30,000 contract through the final stages of approval by the CCSF Purchasing Department.

New RFP for Solar Installations: We are preparing a new RFP for the installation of 24kW in PV solar systems on non-profit buildings and low-income housing in the Southeast neighborhoods of Potrero and Bayview Hunters Point. This project is supported by $250,000 in Duke Energy settlement funds. This RFP will be issued in early August and proposals will be due by mid-September 2005.

Bayview Farmers Market may be relocated: The EJ program launched the Bayview farmers' market in May 2005. The market is held on Saturday mornings, and is now located adjacent to the Bayview Plaza on Gomez Street near Third Street. Customer turnout for the market has been lower than expected and this led to a decrease in the number of farmers/producers willing to participate. This situation has now been stabilized, with a customer base of approximately 100–125 people shopping at the market over the past 3 Saturdays during a 4-hour period, and we now have a core group of 3 local farmers who are interested in participating for the long-term period.

We are evaluating several options, including: (a) immediately relocating the market to the Bayview Opera House plaza or a parking lot of a nearby church; (b) asking non-profit groups to serve as official sponsors, and offer van transport and "carrot cash" coupons to their members so they can obtain produce free-of-charge; (c) purchasing produce directly from the farmers/producers and have non-profit groups distribute the produce directly to local residents, along with some "carrot cash" coupons to help promote the market. By Monday, July 25, 2005, we will make a decision on the site relocation.

Air monitoring in Bayview and Potrero: BayCAMP air monitoring station has been removed from Bayview after one-year of operation. We have data for 12 months on criteria pollutants and will receive data on hazarous air pollutants for the final quarter from CARB in the early fall. Generally, we found the levels of criteria pollutants measured by the BayCAMP station to be comparable to those found at BAAQMD's monitoring station which is located in the Potrero neighborhood. During the winter months, particulate matter (PM) levels were relatively high in the Southeast area of San Francisco.

We will summarize the BayCAMP air quality data in a report and present this to the public at community meetings. Meanwhile, the SF PUC has started to operate four new air monitoring stations in connection with the development of the San Francisco Electric Reliability project, aka the City's combustion-turbine (CT) project. These new monitoring stations will measure levels of particulate matter (PM10 and PM2.5) at the following four locations:

- Malcolm X Academy (Bertha and Harbor)
- Southeast Community Center (Oakdale and Phelps)
- Muni Wood Maintenance Facility (22nd and Minnesota)
- Potrero Recreational Center (Madera and Arkansas)

We will carefully review the PM data from the City's new monitoring stations, and compare it with the BayCAMP data.

RECYCLING

Christine Domingo started as Virtual Warehouse Manager.

Received service award at state recycling conference.

Named to annual Environmental Power List at Organic Style magazine.

Helped re-institute landscape material recycling at USF.

Presented to Russian delegation from Center for Safe Energy using powerpoint in Russian.

Conducted special event recycling training for 5 more large event producers.

Addressed questions raised by Code Advisory Committee of Building Inspection Commission regarding construction and demolition debris ordinances.

Met with two biodiesel producers (one recovers 11,000 gallons/month of grease from SF restaurants) and toured their facilities.

TOXICS REDUCTION:

Toxics – Residential

- Collection Event – Held the first ever joint one-day household toxics and e-waste collection at City College on July 17th. Event was attended by ~ 450 participants, the majority of which had a combination of waste streams (chemical waste & e-waste).

- $200,000 Grant – Awarded grant from the California Integrated Waste Management Board for structural improvement of the Household Hazardous Waste Collection.

- Oil Program – Working with DMV and DPT to disseminate used oil program information through direct outreach with visitors, information dissemination at local offices, and mailings.

Toxics – Commercial

- Dental Mercury Reduction program – Hosted a 1-day Symposium on dental office pollution prevention programs implemented throughout the country (including San Francisco, Seattle, Minnesota and East Bay). Event attended by over 85 people in the POTW, P2 and public health sectors.

- Healthcare Pollution Prevention Grant – Received a grant from EPA to facilitate 6-7 roundtable discussions within local hospital staff. SFE hosted the 1st roundtable discussion on proper management of pharmaceutical waste based on a survey of their environmental concerns.

- Green Business Program – 21 businesses in San Francisco have been honored with green business recognition. SFE hosted an awards reception to honor these businesses. 50 businesses are now enrolled and in the process.

- Eco Footprint Quiz – Developed a tool to help San Franciscans measure their environmental footprint based on their lifestyle. The footprint calculates the amount of CO2 emitted due to their actions (like driving, energy consumed and waste generated)

Environmentally Preferable Purchasing:

- Contracts: Citywide lamps contract, janitorial cleaners contracts now complete – reduced mercury, better energy efficiency, fewer hazardous chemicals
- Ordinance: Mayor signed ordinance 6/17, passed first regulations 7/14 (parts of Resource Conservation Ordinance, MTBE fuel additives)
- Regional efforts: "World Café" purchasing event during WED – built momentum for regional purchasing network – goal is market leverage and cost savings - holding regional planning meeting 8/16
- Program implementation: OCA & SFE actively planning ordinance implementation

Integrated Pest Management

- Conference: 9th Annual SF Urban IPM Conference held June 1 (part of WED) – sold out, despite competition with other Regional IPM Conference.
- Golf herbicides: Harding Park: SFE granted exemption for use of "dicamba" herbicide to control resistant weeds, in preparation for PGA tournament. (SIDENOTE: PGA exerting pressure to approve exemptions – that's NOT why we approved it). Despite exemption, Harding still using considerably less hazardous practices than typical golf course.

GREEN BUILDING:

Green Building – Residential

- Build it Green Public Agency Council – Working with the California Integrated Waste Management Board (CIWMB) to establish Statewide Residential Green Building Guidelines. The CIWMB Sustainability and Market Development Committee will be meeting on September 13 to hear from both sides of the proposed Guidelines.
- 1st Annual West Coast Green Expo and Conference, March 2006 – A three-day event in San Francisco to support regional movements in green building. Expected participation: 4,000 – 6,000 attendees, 250 vendors, and about 30,000 sq. ft. of conference space at Bill Graham Auditorium. SFE will be working with several other city departments and agencies to develop innovative educational tracks, tours, and forums.
- SF Redevelopment Agency – Working with the Agency to develop green building goals for its EE2 project in Bayview Hunters Point. SFE will also co-host a green business breakfast with the Agency's developers, contractors, etc. to discuss green building, the Agency's goals for all future projects.
- Nowhouse – The house is now in Alice Griffith Park, and the grand opening celebration will be in mid-August. MOCD is the lead on this project.

Green Building – Commercial

- Department of Building Inspection is moving forward with the building permit preference for buildings that meet or exceed LEED Platinum Rating

- Building Owners and Managers Association (BOMA) provided SFE the opportunity to comment on their Sustainability Position Paper.

- Ft. Mason Officer's Club - Working with Larry Bain, recipient of the SFE Green Business Award for Jardiniere Restaurant, to integrate green remodeling strategies into the overall goals of his "Nextcourse" project addressing knowledge, food and change.

Green Building – Municipal

- Policy Development – Staff is drafting Environment Code amendments to allow for City purchases of tropical hardwood from forests certified by the Forest Stewardship Council, and to clarify LEED Silver language as it applies to city leaseholds.
- Training – Our Green Building Training Program has resulted in 32 LEED Accredited Professionals among 7 City departments.
- Projects – Staff continues to participate in the design, evaluation and reporting of municipal projects including:
  - Laguna Honda Hospital (LEED Certified goal)
  - California Academy of Sciences (LEED Platinum goal)
  - One South Van Ness (new city leasehold)
  - 25 Van Ness (new home for SFE—LEED Silver goal)
  - SFPUC Emergency Operations Center (LEED Silver goal)
  - Treasure Island Redevelopment (LEED Silver minimum)
  - Transbay Terminal & Redevelopment Area
  - SF History Museum (Old SF Mint—LEED Silver goal)

OUTREACH & EDUCATION

World Environment Day generated considerable international media attention, including over 70 items in the San Francisco Chronicle alone. News clippings book is available for review at the Dept. office.

Web site traffic has grown exponentially over last few months: 130,000 in March, 210,000 in May, and 405,000 in June.

Neighborhood outreach project to promote green cart compostables collection conducted in Excelsior district, April-June, with phonebanking to area residents, followed by distribution of free compostable liners for kitchen compostables pail. Participation in green cart recycling increased 22 percent over 2004 levels during this period, with a citywide increase of 11 percent over the same three months.

School Ed team organized International pen pal program for World Environment Day: 10 classes in SF linked up with 10 classes around the world. Tunza Youth Workshop, in partnership with UNEP, which developed youth environmental accords, was a success. Resulting from this Education Manager Tamar Hurwitz was invited to facilitate UN global youth conference in India, and is currently seeking funding for this.

Program received 15K grant from Altamont to provide compostable liner bags for school green carts.

URBAN FORESTRY

UFP Program Expansion: Hired Grace Ma as Urban Forest Associate. Full-time 9922 position will combine some administrative and programmatic functions. Coordinator has reduced hours to 60% time.

Comprehensive Urban Forest: First Draft Completed. Under review by UFC Planning Committee. Second draft expected by August 18th.

Landmark Tree Ordinance: Urban Forest Council provided recommendations to Supervisor Daly. Draft legislation is under consideration in BOS Neighborhood Services Committee

Pruning Standards- Completed draft of citywide pruning standards as required in UFC enabling ordinance, SFE Strategic Plan, and UFC Street Tree Action Plan. Standards are based on International Society of Arboriculture (ISA) Best Management Practices and ANSI 300 standards, but are tailored to San Francisco. Draft under review by UFC Planning Committee.

PG&E Undergrounding/Tree Site Resolution: This resolution, written by the Urban Forest Council, seeks to preserve tree planting sites during the utility undergrounding process. Passed by full Board of Supervisors on April 12th.

UFC Composition- The UFC began its second two-year term on June 28th. Ten of fifteen original members have remained for a second term; five are new.

General Public: UFC Coordinator responding to an increasing number of inquiries from the public on tree-related matters (roughly 5 per day) including hazardous tree/property line issues, rubber sidewalk advocates, tree removal protests, citizen-led planting efforts and more.

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO
COMMISSION ON THE ENVIRONMENT
REGULAR MEETING
DRAFT MINUTES

DOCUMENTS DEPT.
JUL 28 2005
SAN FRANCISCO
PUBLIC LIBRARY

Tuesday, July 26, 2005, 5:00 P.M.
City Hall, Room 416
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

COMMISSION MEMBERS: Commissioners Nia Crowder (President); Paul Pelosi Jr. (Vice President); Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

   The meeting was called to order at 5:10 p.m. Present: Commissioners Pelosi Jr. (Acting President), Desser, King, and Mok. Excused: Commissioners Crowder and Rodriguez.

2. **ACTION:** Adoption of Minutes of the April 8, 2005 Special Meeting Retreat.

   Upon motion by Commissioner Wald and second by Commissioner Mok the April 8, 2005 Special Meeting Retreat Minutes were unanimously adopted (Commissioner Desser absent for this item). There was no public comment at this time.

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. There was no public comment at this time.

4. **INFORMATION:** Update on Supermarket Checkout Bag Issues.

Sponsor: Commissioner Johanna Wald
Speaker: Staff: Robert Haley, Recycling Program Manager

Director Blumenfeld advised that a nexus study is in the process of being finalized and that there are legal issues. Negotiations with grocery stores and plastic and paper bag manufacturers are being worked on to (1) reduce the number of plastic and paper bags that the grocery stores use, and (2) put in place a system for efficient recycling. A decision is being worked on that the Board, the Mayor, and all involved parties can agree to. No public comment was heard at this time.

5. **PRESENTATION:** Refuse Rate Process Overview.

Sponsor: Commissioner Christina Desser
Speaker: Staff: Robert Haley, Recycling Program Manager

Robert Haley, Recycling Program Manager, Department of the Environment discussed the Refuse Rate Process. On July 1, Norcal Waste Systems Company submitted a letter of intent to file a rate application to increase residential garbage rates. The last time a rate application was filed was five years ago and the intent is for another five-year plan of programs and rate increases. The July 1 rate application is the beginning of an 11-month calendar of events to allow for public involvement. The events include:

- September 9 (tentative date) public workshop to involve the public;
- October 11 (tentative date) draft rate application;
- A second public workshop to discuss the draft application;
- A completeness determination on the draft application followed by a submittal of any missing information;
- January 9, 2006 final rate application to be submitted;
- Another completeness determination, two more public workshops and then a series of Director's Hearings (Director of the Department of Public Works);
- Early April 2006, a Director's Report, a draft staff report, and a recommended Order outlining what the increases will be. If an objection is not filed, the rates will stand;
- May 2006--If an objection is filed, a series of rate board hearings would be convened in May and a decision made in June;
- July 2006--final rates would go into effect.

It was indicated that this process would require a great deal of staff time for both the Department of the Environment and the Department of Public Works. The City is contracting with a Rate Payer Advocate and creating standardized forms to help ratepayers understand the information. The Commission would be kept up to date of the process.

Commissioner Pelosi recommended the following: (1) start the process earlier to better advise the public; (2) meetings be well publicized; (3) set firm meeting dates; (4) ensure ample space in the meeting room for public participation, and (5) limit staff time. Mr. Haley advised that the process would require at least two full-time Recycling staff members for a few months.

Public comment from Ms. Nancy Wuerfel asking when the Commission would be reviewing the five-year budget plan that would become part of the garbage rate fee. Commissioner Pelosi advised that the Operations Committee would be hearing the five-year budget plan and then would be heard at the full Commission as an agenda item in Fall 2005.

6. **PRESENTATION:** Interim Annual Report for the Integrated Pest Management (IPM) Program (Explanatory Documents: San Francisco Integrated Pest Management Program 2003 Annual Report and Graph--Pesticide Use in San Francisco)

Sponsor: Director Jared Blumenfeld
Speakers: Staff: Debbie Raphael, Toxics Reduction Program Manager and Chris Geiger, City Toxics Reduction Coordinator

Debbie Raphael, Toxics Reduction Program Manager discussed successes and challenges of the Integrated Pest Management Program and gave highlights of the past year. A graph was shown on total pesticide use since the Ordinance was enacted in 1996 through 2004 indicating a 74% decrease over time in the pounds of pesticides used. Future methods to decrease use by increased labor or creative methods would be studied. A discussion was held on the 91% decreased use of the pesticide Roundup and the exemption to Harding Park Golf Course. Department of the Environment is working with other departments to achieve goals.

Chris Geiger, City Toxics Reduction Coordinator discussed (1) the IPM Advisory Committee that meets monthly; (2) pesticide tier system for toxicity; (3) rodenticide use; (4) trainings, conferences and special events; and (4) future challenges.

No public comment was heard at this time.

7. **INFORMATION:** Implementation Report on the Arsenic Treated Wood Ordinance (Explanatory Documents: Implementation Report on the Arsenic Treated Wood Ordinance; Chapter 13 Environment Code; Supporting Attachments and Cover Letter to Board of Supervisors)

Sponsor: Director Jared Blumenfeld
Speaker: Staff: Debbie Raphael, Toxics Reduction Program Manager

Debbie Raphael, Toxics Reduction Program Manager reported that in 2003 San Francisco became the first City to adopt an Ordinance banning arsenic-treated wood in all applications except in marine eco-systems. The Ordinance required that in 2005 the Commission on the Environment would report back to the Board of Supervisors on the progress of the Ordinance. An IPM Annual Report was included in the Commission meeting packet. Ms. Raphael recommended that the Commission be active in City department's compliance of the Ordinance. The feedback the Department received from City Departments is as follows:

- Recreation and Park gave a detailed description of their Arsenic Treated Wood Management Plan that included sampling all wood play structures and identifying those that are leeching arsenic. Sealing and replacement protocols were developed. This information can be found on their website. It was noted that the Ordinance calls for notification procedures on these structures that have not yet been developed. The Department would be reporting to the Board of Supervisors that a recommendation had been made for the Recreation and Park Department to post warning signs on their play structures.

- The Port had submitted a report to the Department on their progress along with photographs showing their inventory. Not clear whether testing had been done on their sealing protocol and what their schedules would be.

Commissioner Desser commended the Toxics Reduction program area for their work and asked to create mechanisms for sharing information with other Cities and Agencies. The following suggestions were made: (1) Commissioner Wald recommended involving child advocacy organizations and environmental organizations with toxic programs to help participate in reducing toxics in the City and the Bay Area and that more effort be made to be made to involve the service providers for the residential community and residents; (2) Commissioner King recommended testing the toxicity of the sealant; and (3) Commissioner Desser recommended developing a Certificate indicating dates of equipment inspection that is user friendly to the public.

Public comment from Carol Bach, Project Manager, Environmental Health and Safety, Port of San Francisco Environmental Department reporting that the Port turned in an inventory report of treated wood on Port property that was potentially exposed to public contact and a schedule for sealing. The Port Maintenance Department has prioritized the sealing program based on their evaluation of people's potential contact and initiated application of latex paint in all of the high priority areas with an anticipated completion date of August. The Facilities Management Department has taken over the project. Commissioner Pelosi asked Ms. Bach to update the Department and the Commission on their schedule of completion dates.

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8. **PRESENTATION:** Draft Treasure Island Sustainability Plan (Explanatory Documents: Treasure Island Draft Sustainability Plan and LEED Gold Standard).

Sponsors: Commissioners Johanna Wald and Arlene Rodriguez
Speaker: Staff: David Assmann, Deputy Director and
Jack Sylvan, Mayor's Office of Workforce & Economic Development-Base Reuse

Director Blumenfeld reported that he is one of the Treasure Island Development Authority Commissioners and that the Board meets monthly. Michael Cohen, Director of Mayor's Office of Workforce & Economic Development-Base Reuse provided an overview and provided context for the Sustainability Plan for Treasure Island. A Treasure Island Redevelopment Project Term Sheet Forward Schedule from October 2004 - November 2005 which includes key issues for the project and the Treasure Island Redevelopment Planning Schedule from July 2005 – December 2006 was reviewed.

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9. **INFORMATION:** Commission Secretary's Report
   Monica Fish, Commission Secretary

   - Communications and Correspondence: The Commission Secretary made the following reports:

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13. **INFORMATION:** Director's Report
    - Jared Blumenfeld, Director, Department of the Environment gave updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division as explained in the Director's Report dated July 26, 2005.

      Public comment from Ms. Carolyn Blair recommending the Department of Public Work's Street Park Plan and the idea of sidewalk pocket parks as presented by Jocelyn Cohen at the Urban Forest Council Meeting on July 22, 2005. Urged the Commission to embrace the use of rubber sidewalks.

14. **INFORMATION**: President's Announcements. Acting President Pelosi thanked the Department for their work on World Environment Day and indicated that the Commission would reach out to the Department on peaker issues and alternative energy sources.

15. **INFORMATION:** New Business: No new business was heard at this time.

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    Public comment from Ms. Ruth Gravanis on the Commission showing support for funding for the west span pedestrian and bicycle pathway and to schedule this topic as an agenda item for a future Commission meeting.

17. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. No public comment was heard at this time.

18. **ADJOURNMENT:** The meeting adjourned at 7:15 p.m.

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506; (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org within three business days of a meeting.*

Monica Fish/ENV/SFGOV
07/28/2005 01:14 PM

To Nia Crowder, Paul Pelosi, Angelo King,
cc
bcc
Subject Hydrogen Meetings

Commissioners:

So August 29, 5:00 p.m. for the next meeting--an agenda will be forthcoming. The fourth Wednesday at 5:00 p.m. (not 4:30 p.m. as earlier indicated) starting in October. A bylaw change will be noticed for the Oct. meeting.

Monica Fish, Commission Secretary
Commission on the Environment
(415) 355-3709

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO COMMISSION ON THE ENVIRONMENT REGULAR MEETING APPROVED MINUTES

Tuesday, July 26, 2005, 5:00 P.M.
City Hall, Room 416
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

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COMMISSION MEMBERS: Commissioners Nia Crowder (President); Paul Pelosi Jr. (Vice President); Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

   The meeting was called to order at 5:10 p.m. Present: Commissioners Pelosi Jr. (Acting President), Desser, King, and Mok. Excused: Commissioners Crowder and Rodriguez.

2. **ACTION:** Adoption of Minutes of the April 8, 2005 Special Meeting Retreat.

   Upon motion by Commissioner Wald and second by Commissioner Mok the April 8, 2005 Special Meeting Retreat Minutes were unanimously adopted (Commissioner Desser absent for this item). There was no public comment at this time.

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. There was no public comment at this time.

Department of the Environment, City and County of San Francisco
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Telephone: (415) 355-3700 • Fax: (415) 554-6393
Email: Monica.Fish@sfgov.org • www.sfenvironment.com

100% Post-Consumer Content

4. **INFORMATION:** Update on Supermarket Checkout Bag Issues.

Sponsor: Commissioner Johanna Wald
Speaker: Staff: Robert Haley, Recycling Program Manager

Director Blumenfeld advised that a nexus study is in the process of being finalized and that there are legal issues. Negotiations with grocery stores and plastic and paper bag manufacturers are being worked on to (1) reduce the number of plastic and paper bags that the grocery stores use, and (2) put in place a system for efficient recycling. A decision is being worked on that the Board, the Mayor, and all involved parties can agree to. No public comment was heard at this time.

5. **PRESENTATION:** Refuse Rate Process Overview.

Sponsor: Commissioner Christina Desser
Speaker: Staff: Robert Haley, Recycling Program Manager

Robert Haley, Recycling Program Manager, Department of the Environment discussed the Refuse Rate Process. On July 1, Norcal Waste Systems Company submitted a letter of intent to file a rate application to increase residential garbage rates. The last time a rate application was filed was five years ago and the intent is for another five-year plan of programs and rate increases. The July 1 rate application is the beginning of an 11-month calendar of events to allow for public involvement. The events include:

- September 9 (tentative date) public workshop to involve the public;
- October 11 (tentative date) draft rate application;
- A second public workshop to discuss the draft application;
- A completeness determination on the draft application followed by a submittal of any missing information;
- January 9, 2006 final rate application to be submitted;
- Another completeness determination, two more public workshops and then a series of Director's Hearings (Director of the Department of Public Works);
- Early April 2006, a Director's Report, a draft staff report, and a recommended Order outlining what the increases will be. If an objection is not filed, the rates will stand;
- May 2006--If an objection is filed, a series of rate board hearings would be convened in May and a decision made in June;
- July 2006--final rates would go into effect.

It was indicated that this process would require a great deal of staff time for both the Department of the Environment and the Department of Public Works. The City is contracting with a Rate Payer Advocate and creating standardized forms to help ratepayers understand the information. The Commission would be kept up to date of the process.

Commissioner Pelosi recommended the following: (1) start the process earlier to better advise the public; (2) meetings be well publicized; (3) set firm meeting dates; (4) ensure ample space in the meeting room for public participation, and (5) limit staff time. Mr. Haley advised that the process would require at least two full-time Recycling staff members for a few months.

Public comment from Ms. Nancy Wuerfel asking when the Commission would be reviewing the five-year budget plan that would become part of the garbage rate fee. Commissioner Pelosi advised that the Operations Committee would be hearing the five-year budget plan and then would be heard at the full Commission as an agenda item in Fall 2005.

6. **PRESENTATION:** Interim Annual Report for the Integrated Pest Management (IPM) Program (Explanatory Documents: San Francisco Integrated Pest Management Program 2003 Annual Report and Graph--Pesticide Use in San Francisco)

Sponsor: Director Jared Blumenfeld
Speakers: Staff: Debbie Raphael, Toxics Reduction Program Manager and Chris Geiger, City Toxics Reduction Coordinator

Debbie Raphael, Toxics Reduction Program Manager discussed successes and challenges of the Integrated Pest Management Program and gave highlights of the past year. A graph was shown on total pesticide use since the Ordinance was enacted in 1996 through 2004 indicating a 74% decrease over time in the pounds of pesticides used. Future methods to decrease use by increased labor or creative methods would be studied. A discussion was held on the 91% decreased use of the pesticide Roundup and the exemption to Harding Park Golf Course. Department of the Environment is working with other departments to achieve goals.

Chris Geiger, City Toxics Reduction Coordinator discussed (1) the IPM Advisory Committee that meets monthly; (2) pesticide tier system for toxicity; (3) rodenticide use; (4) trainings, conferences and special events; and (4) future challenges.

No public comment was heard at this time.

7. **INFORMATION:** Implementation Report on the Arsenic Treated Wood Ordinance (Explanatory Documents: Implementation Report on the Arsenic Treated Wood Ordinance; Chapter 13 Environment Code; Supporting Attachments and Cover Letter to Board of Supervisors)

Sponsor: Director Jared Blumenfeld
Speaker: Staff: Debbie Raphael, Toxics Reduction Program Manager

Debbie Raphael, Toxics Reduction Program Manager reported that in 2003 San Francisco became the first City to adopt an Ordinance banning arsenic-treated wood in all applications except in marine eco-systems. The Ordinance required that in 2005 the Commission on the Environment would report back to the Board of Supervisors on the progress of the Ordinance. An IPM Annual Report was included in the Commission meeting packet. Ms. Raphael recommended that the Commission be active in City department's compliance of the Ordinance. The feedback the Department received from City Departments is as follows:

- Recreation and Park gave a detailed description of their Arsenic Treated Wood Management Plan that included sampling all wood play structures and identifying those that are leeching arsenic. Sealing and replacement protocols were developed. This information can be found on their website. It was noted that the Ordinance calls for notification procedures on these structures that have not yet been developed. The Department would be reporting to the Board of Supervisors that a recommendation had been made for the Recreation and Park Department to post warning signs on their play structures.

- The Port had submitted a report to the Department on their progress along with photographs showing their inventory. Not clear whether testing had been done on their sealing protocol and what their schedules would be.

Commissioner Desser commended the Toxics Reduction program area for their work and asked to create mechanisms for sharing information with other Cities and Agencies. The following suggestions were made: (1) Commissioner Wald recommended involving child advocacy organizations and environmental organizations with toxic programs to help participate in reducing toxics in the City and the Bay Area and that more effort be made to involve the service providers for the residential community and residents; (2) Commissioner King recommended testing the toxicity of the sealant; and (3) Commissioner Desser recommended developing a Certificate indicating dates of equipment inspection that is user friendly to the public.

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Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

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Approved: September 27, 2005

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO
COMMISSION ON THE ENVIRONMENT

NOTICE OF REGULAR MEETING AND AGENDA
Tuesday, September 27, 2005, 5:00 P.M.
City Hall, Room 416
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

COMMISSION MEMBERS: Commissioners Nia Crowder (President), Paul Pelosi Jr. (Vice President), Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez and Johanna Wald.

Commission Secretary: Monica Fish

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ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

2. **ACTION:** Adoption of Minutes of the July 26, 2005 Meeting. (Explanatory Document: Draft Minutes of the July 26, 2005 Meeting (Word))

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

4. **INFORMATIONAL PRESENTATION:** Waste Characterization Study: Analysis of what is left in San Francisco's waste stream (Explanatory Document: Waste Characterization Study August 2005 (PDF)).
SPONSOR: Jared Blumenfeld, Director
SPEAKER: Dan Sicular, Senior Project Manager, Environmental Science Associates

5. **INFORMATIONAL PRESENTATION:** Toxicity Profile: Study on toxicity in waste stream (Explanatory Document: Toxicity Profile of Disposed Waste Generated Within San Francisco (PDF)).
SPONSOR: Jared Blumenfeld, Director
SPEAKER: George Savage, Executive Vice President, CalRecovery Inc.

Department of the Environment, City and County of San Francisco
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Email: Monica.Fish@sfgov.org • www.sfenvironment.com

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6. **INFORMATIONAL PRESENTATION:** Biodiesel and City Departments.
SPONSOR: Jared Blumenfeld, Director
SPEAKER: Kevin Drew, Residential Recycling Coordinator and
Randall Von Wedel, Ph.D., Principal Biochemist, BioSolar / CytoCulture International, Inc.

7. **DISCUSSION and POSSIBLE ACTION:** Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses (Board of Supervisors File No. 050922). Commission may vote on a Resolution supporting the legislation (Explanatory Documents: Board of Supervisors Ordinance File No. 050922 Introduced May 24, 2005 (PDF) and Draft Resolution Supporting Legislation (Word)).
SPONSOR: Commissioner Nia Crowder
SPEAKER: Jared Blumenfeld, Director

8. **INFORMATIONAL PRESENTATION:** Update on Environmentally Preferable Purchasing Program and Presentation of Public Participation Guidelines (Explanatory Documents: Department Regulations SFE2005-01-PPO and SFE2005-02-PPO and How Commodities are Purchased under San Francisco's Precautionary Purchasing Ordinance (PDF)).
SPONSOR: Jared Blumenfeld, Director
SPEAKERS: Chris Geiger, City Toxic Reduction Coordinator and
Deanna Simon, City Toxic Reduction Specialist Assistant

9. **INFORMATIONAL REPORT:** Status Report on the Climate Action Plan (Explanatory Document: Update on the Climate Action Plan (Word) and Climate Action Plan Executive Summary (PDF)).
SPONSOR: Commissioner Nia Crowder
SPEAKERS: Cal Broomhead, Energy Manager and
Melissa Capria, Climate Action Coordinator

10. **DISCUSSION and POSSIBLE ACTION:** Status Report on Treasure Island Development Authority (TIDA) Environmental Goals: Commission may consider requesting a joint public hearing between the Commission and TIDA on the Treasure Island Draft Sustainability Report.
SPONSOR: Commissioner Nia Crowder
SPEAKERS: Jared Blumenfeld, Director,
Jack Sylvan, Treasure Island Project Manager, Mayor's Office of Workforce &
Economic Development-Base Reuse

11. **INFORMATIONAL REPORT:** Community Outreach and Report on the westbound portion of the Bay Bridge bike lane.
SPONSOR: Commissioner Nia Crowder
SPEAKER: Andy Thornley, Program Director, San Francisco Bike Coalition

12. **DISCUSSION and ACTION:** Proposed Amendment to the Bylaws of the San Francisco Commission on the Environment to amend the regular meeting date of the Hydrogen & Renewable Energy Committee (Explanatory Documents: Notice of Proposed Amendment to the Bylaws and Draft Resolution Amending Bylaws (Word)).

13. **DISCUSSION:** Interest in Commission Office. As stated in the Commission of the Environment Bylaws, Article IV – Officers, Section 3A: "At the regular Commission meeting held in September of each year, any Commissioner interested in running for office shall state publicly his or her interest and willingness to run for a specific office." Elections will be held at the November Regular Meeting.

14. **INFORMATIONAL PRESENTATION and FUTURE ACTION:** San Francisco Environment proposed move from 11 Grove to 25 Van Ness. Specific focus on plans to retain Eco-Center and ensure that move is done in a cost effective manner. Vote on plan of action for move at the next Commission meeting. A meeting is to be scheduled for the October Finance and Operations Committee meeting.

SPONSOR: Commissioner Paul Pelosi Jr.

15. **INFORMATION:** Commission Secretary's Report

Monica Fish, Commission Secretary

- Communications and Correspondence (Explanatory Document: Correspondence)
- Update on Pending City Legislation (Explanatory Document: Commission Secretary Report September 27, 2005 (Word)).

16. **INFORMATION:** Hydrogen and Renewable Energy Committee Report

- Chair's Report: Commissioner Crowder will highlight the meeting of August 29, 2005 and review the agenda for the upcoming meeting on October 26, 2005, 5:00 p.m. to be held at City Hall, Room 421.

17. **INFORMATION:** Operations Committee Report

- Chair's Report: Commissioner Rodriguez will review the agenda for the upcoming meeting on October 19, 2005, at 4:00 p.m. to be held at the Department of the Environment, Ground Floor Conference Room.

18. **INFORMATION:** Policy Committee Report

- Chairs Report: Commissioner Wald will highlight the meeting of September 22, 2005 and review the agenda for the upcoming meeting on October 27, 2005, 5:00 p.m. to be held at City Hall, Room 421. The August 25, 2005 meeting was cancelled.

19. **INFORMATION:** Director's Report

- Jared Blumenfeld, Director, Department of the Environment will give updates on San Francisco Environment administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division (Explanatory Document: Director's Report (Word))

20. **INFORMATION**: President's Announcements

21. **INFORMATION:** New Business

22. **FUTURE AGENDA ITEMS**

23. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

24. **ADJOURNMENT**

Monica Fish, Commission Secretary
TEL: (415) 355-3709; FAX: (415) 554-6393

** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506, (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org within three business days of a meeting.

Public Comment

At this time, members of the public may address the Commission on items of interest that are within the subject matter jurisdiction of the Commission but are not on today's agenda. Public comment will be taken following each agendized item. Each member of the public may address the Commission for up to three minutes, unless otherwise announced by the President. If it is demonstrated that the comments by the public will exceed 15 minutes, the President may continue Public Comment to another time during the meeting.

The Brown Act forbids the Commission from taking action or discussing any item or issue not appearing on the posted agenda. This rule applies to issues raised in public comment as well. In response to public comment, not on an agendized item, the Commission is limited to:

1. Briefly responding to statements made or questions posed by members of the public, or
2. Request staff to report back on a matter at a subsequent meeting, or
3. Directing staff to place the item or issue on a future agenda (Government Code Section 54954.2(a).)

Disability Access

The Commission on the Environment Operations Committee Meeting will be held at the Department of the Environment, 11 Grove Street, in the Civic Center area. The meeting room is wheelchair accessible. The closest accessible BART station is the Civic Center Station at United Nations Plaza and Market Street. Accessible MUNI lines serving this location are: #71 Haight/Noriega and the F Line to Market and Van Ness and the Metro Stations at Van Ness and Market and at Civic Center. For information about MUNI accessible services call (415) 923-6142. There is accessible curbside parking adjacent to City Hall on Grove Street and Van Ness Avenue and in the vicinity of the Veterans Building at 401 Van Ness Avenue adjacent to Davies Hall and the War Memorial Complex.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call the Mayor's Office on Disability accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance
(Chapter 67 of the San Francisco Administrative Code)

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, Frank Darby, Sunshine Task Force Administrator, City Hall, Room 409, One Dr. Carlton B. Goodlett Place, San Francisco, CA 94102-4683 at Phone No.: (415) 554-7724; Fax No.: (415) 554-7854; E-mail: sotf@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct Code §2.100, et. seq] to register and report lobbying activity. For more information about the Lobbyist Ordinance, please contact the Ethics Commission at: 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300, fax (415) 581-2317; web site at www.sfgov.org/ethics.

Important Information

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

NOTE: Persons unable to attend the meeting may submit to the Commission on the Environment, by the time the proceedings begin, written comments regarding the agenda items above. These comments will be made a part of the official public record and shall be brought to the attention of the Commission on the Environment members. Any written comments should be sent to: Commission Secretary of the Environment, 11 Grove Street, San Francisco, CA 94102 by 5:00 p.m. on the day prior to the hearing. Comments which cannot be delivered to the Commission Secretary by that time may be taken directly to the hearing at the location above.

When bringing handouts to meetings, please photocopy on both sides of the paper and try to use post-consumer recycled or tree-free paper. Also, please bring sufficient copies of handouts for the Commission, the Commission Secretary and the public.

Posted: 9/22/05

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: September 27, 2005 **ITEM NO.** 4

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Waste Characterization Study August 2005

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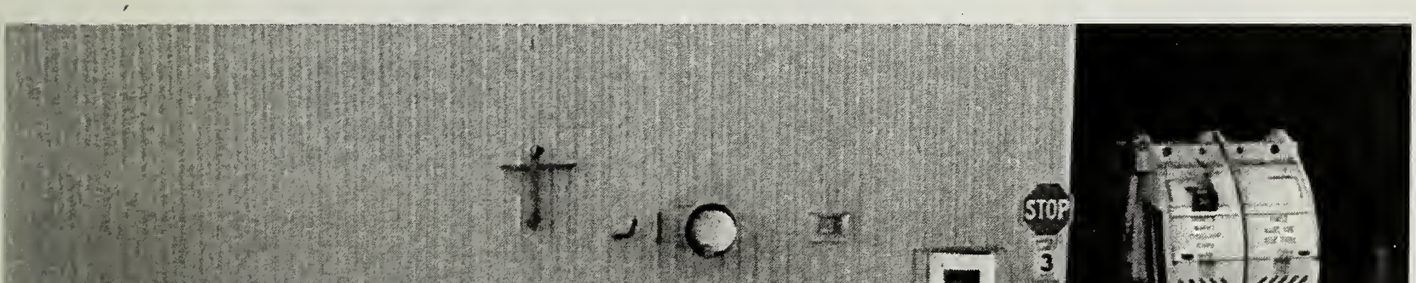
***This list reflects the explanatory documents provided.**

WASTE CHARACTERIZATION STUDY

Prepared for:
City and County of San Francisco
Department of the Environment

August 2005



WASTE CHARACTERIZATION STUDY

Prepared for:
City and County of San Francisco
Department of the Environment

August 2005

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PREFACE

This study is one part of a waste characterization project performed for the San Francisco Department of the Environment by the following team of consultants:

- Environmental Science Associates, which provided project management, methodology development, visual waste characterization, and report preparation and production.
- CalRecovery, Inc., which provided methodology development, research, sample analysis, and report preparation for the Toxicity Profile portion of this project.
- Sage Environmental, which provided methodology development.
- Cascadia Consulting Group, which provided methodology and database development, data analysis, and report preparation, as well as hand sorting of waste samples through their subcontractor Sky Valley Associates.
- Matthew J. Southworth, who provided tonnage stream data and sample planning.
- Eagle Eye Editing, which provided data entry, report preparation, and editing services.

The purpose of this project was to identify the major constituents in the San Francisco municipal solid waste stream. The study methods were designed to enable City staff to prioritize future efforts to divert wastes from disposal through the development of new waste reduction and recycling options for San Francisco businesses and residents. Samples from loads of solid waste from refuse collection route trucks, individual businesses, City departments, and private citizens were manually sorted or visually examined to compile profiles of waste stream constituents. This study provides the findings from these waste characterization efforts. A companion study focuses on the toxicity of materials that were found during sampling.

The study effort has been assisted at every step by the management and workers at the local affiliates of Norcal Waste Systems, Inc., and by staff in the Department of the Environment, the Department of Public Works, and the Recreation and Park Department. The management staff at Hillside Landfill in Colma was also very helpful in arranging for visual characterization of waste samples. The assistance of these companies, agencies, and individuals is gratefully acknowledged.

EXECUTIVE SUMMARY

The City and County of San Francisco Department of the Environment (SFE) is responsible for the City's role in recycling and waste reduction programs throughout San Francisco. The SFE is working to meet the City goals of 75 percent landfill diversion by 2010 and zero waste by 2020. To support this work, the SFE commissioned this study to characterize and quantify the municipal solid waste (MSW) sent to landfill from San Francisco. This report presents the results of this study, which was conducted between autumn 2004 and spring 2005.

Norcal Waste Systems, Inc. operates much of the solid waste infrastructure in San Francisco. This includes the San Francisco Recycling and Disposal (SFR&D) Transfer Station, the adjacent Integrated Material Recovery Facility (iMRF), Recycle Central at Pier 96, and the following collection companies: Sunset Scavenger Company and Golden Gate Disposal and Recycling. Disposed wastes from these facilities are landfilled, and most other MSW originating in San Francisco is taken to Hillside Landfill in Colma and Ox Mountain Landfill in Half Moon Bay. MSW delivered to Norcal's facilities from various San Francisco sources was quantified based on records provided by Norcal; this MSW was characterized through hand-sorting and visual analysis of the disposed waste samples. The data from waste samples were subjected to statistical analysis to produce a waste composition profile for each *sector* of the city's disposed waste stream. Individual sectors were then combined in the analysis to produce composition profiles for larger portions of the disposed waste stream.

The finding of substantial quantities of readily recyclable materials, in the range of 30 to 50 percent, was consistent for most of the waste stream sectors and subsectors that were examined in this study. The SFE can promote significant progress toward the 75-percent-reduction and zero-waste goals by working to increase the use of existing options for recycling and waste reduction.

Figure 1 summarizes the composition for the disposed waste stream in its entirety. Table 1 shows the "top 10" most prevalent categories of wastes in the entire system.

Figure 1: Summary of the Composition of Waste Disposed through Norcal

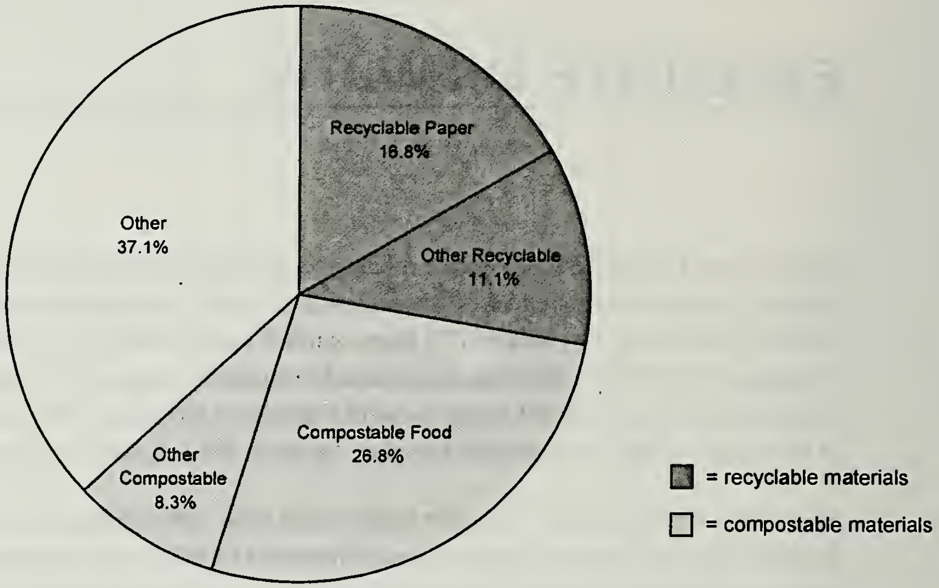


TABLE 1
TOP 10 MATERIALS IN SAN FRANCISCO WASTE DISPOSED THROUGH NORCAL

Material	Percent	Cumulative Percent
Food	26.8%	
Mixed Low-Grade Paper	7.2%	34.1%
Compostable/Soiled Paper	5.5%	39.5%
Other Film	4.5%	44.0%
Newspaper	3.7%	47.8%
Asphaltic Roofing	3.6%	51.4%
Textiles	3.4%	54.8%
Plain OCC/Kraft Paper	3.2%	58.1%
Hazardous Waste	2.9%	61.0%
Composite/Other Products	2.8%	63.8%

SECTION I

Introduction and Background

The City and County of San Francisco Department of the Environment (SFE) initiated a study to determine the quantities and composition of municipal solid waste (MSW) sent from within the city to landfills for disposal. The general purpose of the study was to profile the types and amounts of materials in disposed MSW. The findings of the study are expected to provide a basis for measuring the effectiveness of existing diversion programs, determining what materials continue to be landfilled, and developing new programs for waste reduction and material recovery.

To meet the City's objectives, the study team characterized 757 samples of MSW, 197 of which were characterized by hand-sorting and 560 of which were characterized visually. Data collection through the hand-sorting of samples occurred in September 2004 and February 2005, and visual characterization of samples was done at various times between October 2004 and June 2005.

The focus of the study included the majority of MSW generated within city boundaries and disposed through Norcal. This report presents findings for the entire portion of the waste stream disposed through Norcal, as well as for key sectors of that waste stream. Composition findings are organized by waste sector and subsector, as indicated by the bulleted descriptions below.

Citywide Aggregation of Findings at the Highest Level Possible

- **Findings for waste from within the city and disposed through Norcal.** This category includes the following waste sectors, which are described in more detail below: waste from Fantastic 3 sources, residuals from the Pier 96 facility, other waste collected commercially outside the Fantastic 3 program, self-hauled waste, and residuals from the Integrated Material Recovery Facility (iMRF). It also includes items disposed through the Bulky Items Collection program, although the waste from that program was not characterized directly as part of this study. Findings aggregated at this level do not include characterization data from the Hillside Landfill, although composition findings specific to the landfill are reported separately in Appendix A.

Findings Based on Hand-Sorted Samples

- **Combined Fantastic 3 programs (includes rear-loader service)**
    - Single-family residential Fantastic 3
    - Multifamily residential Fantastic 3
    - Commercial, government, and institutional Fantastic 3

- **Residual waste from the Pier 96 facility**
    - Recovery operations addressing Fantastic 3 waste
    - Recovery operations addressing other waste

Findings Based on a Combination of Hand-Sorted and Visually Characterized Samples

- **Waste collected commercially outside the Fantastic 3 program**
    - **Commercially collected multifamily residential waste.** This category includes waste collected from multifamily residences through the use of packer trucks, as well as waste from multifamily residences that is delivered to the transfer station in rolloff containers. The samples of multifamily waste were characterized through hand sorting.

    - **Commercially collected waste from commercial, government, and institutional (CGI) sources.** This category includes waste collected from CGI sources through the use of packer trucks, as well as waste from CGI sources that is delivered to the transfer station in open rolloff containers or compactors. Twenty-four samples from packers and 19 samples from compactors were characterized through hand sorting, while six samples from open rolloff containers were characterized visually.

    - **Waste from home cleanout operations.** This includes waste from home cleanout events that is delivered to the transfer station in open rolloff containers. All six samples of this type of waste were characterized visually.

Findings Based on Visual Characterization of Samples

- **Self-hauled waste.** This category includes waste from Department of Public Works (DPW) sources (described in more detail below), commercial businesses that hold waste disposal accounts with Norcal, packers from the Recreation and Park Department, and other city self-hauled waste. Specific sub-sectors that are examined in detail are described immediately below. This sector does not include wastes brought to the Transfer Station by the general public, because those wastes are sorted in the public disposal area, after which all residues are sorted in the iMRF.
    - **Self-hauled waste from businesses**

    - **Self-hauled waste from the DPW.** This category includes waste from city litter cans, street sweepings, litter patrol and broom support, DPW packer trucks, and other DPW waste not classified elsewhere.

- **Findings for specific industry groups and City operations.** These findings were based on visual characterization of samples (containers or vehicles full of waste) from targeted members of particular industry groups and City operations. These findings are considered to "stand alone" for each group, and the data from these samples were not combined with data from other parts of the study.

- **Residuals from the iMRF.** These residuals were visually characterized, but it was necessary to use a different method from the load-by-load techniques used for other samples. These residues were produced continuously but were not directly accessible; they could only be observed as they traveled to the transfer station pit on the residue discharge conveyor. This required unique sampling and data recording strategies, which are described in more detail in Appendix C.

- **Findings for Hillside Landfill.** These findings were based on visual characterization of loads arriving at the landfill. These findings are considered to "stand alone," and the data from these samples were not combined with data from other parts of the study.
- **Findings for Ox Mountain Landfill.** These findings were based on quantity data from the Disposal Reporting System maintained by the California Integrated Waste Management Board, and on descriptions of waste sources and composition provided by management of Ox Mountain Landfill. These findings are also considered to "stand alone."

The appendices to this report provide additional details about several aspects of the study:

- Detailed data, in a series of tables
- The names and definitions of the material categories used for the study
- The waste sampling methodology: how vehicles were selected, wastes were extracted, and materials were sorted and weighed
- Waste composition calculations, expressed as formulas
- Samples of field forms

A. Summary of Data Collection and Analysis Activities

The composition of disposed MSW can be determined through examination only after resource recovery steps have been taken. Therefore, waste samples were obtained for hand-sorting and visual characterization after the waste had been subjected to recovery processes, including source separation of recyclables, "pick lines," and processing by the material recovery facility. In this study, the characterization of waste samples occurred at the following locations:

- The Transfer Station operated by San Francisco Recycling and Disposal (SFR&D)
- The iMRF, adjacent to the Transfer Station
- Other receiving areas at the SRF&D site
- The Hillside Landfill, in Colma

B. Developing the Sampling Plan

For the purposes of this study, the entire disposed waste stream was divided into several identified waste sectors, which were further divided into subsectors. For subsectors that were expected to consist of relatively smaller or more diverse pieces of material, a hand-sorting characterization plan was prepared. For subsectors of the waste stream that were expected to consist of relatively larger, less diverse pieces of material (such as waste from construction and demolition projects), a visual characterization plan was developed. Visual characterization was also used to compile data about wastes from certain types of City operations and commercial establishments, as identified by SFE staff.

Table 2 shows the waste sectors that were addressed during the study, as well as the characterization approach and the number of waste samples that were characterized for each sector. Appendix C provides more detailed information about the approach used for specific subsectors of the waste stream.

TABLE 2
NUMBER OF SAMPLES CHARACTERIZED FROM EACH WASTE SECTOR

Waste Sector	Characterization Method	Numbers of Samples
Fantastic 3 Program	Hand-sort	115
Pier 96	Hand-sort	18
Commercially Collected Waste	Hand-sort and visual	76
Self-Hauled Waste	Visual	27
iMRF	Visual	55
Specific Types of Businesses and Institutions	Visual	147
Hillside Landfill	Visual	321

It is important to understand the sizes of the various subsectors and sectors, in addition to their composition, for several reasons:

- When planning new waste diversion programs, their potential benefit can be estimated in terms of the tonnage of waste that they will divert.
- If questions about the marketing of diverted materials arise, such questions need to be addressed using estimates of diverted tonnages.
- Data from subsectors should be aggregated to the sector level using a weighted-average technique, in proportion to the tonnages of each subsector. In the same way, data for the entire waste stream or a group of sectors can be compiled from lower-level data.

For this study, the sizes of waste flows are expressed in tons per year, using local data provided by Norcal and other data from the Disposal Reporting System maintained by the California Integrated Waste Management Board. Table 3 shows those tonnages, applied to the subsectors and sectors defined above.

The annual tonnages provided by Norcal are from the period July 2003–June 2004, the most recent rate year that was completed prior to the start of this study. The annual tonnages from the Disposal Reporting System are from calendar year 2003, the most recent year with data available at the time of report preparation.

The volumes of several of these streams are likely to change substantially in future years. For example, the throughput of the iMRF and Pier 96 operations is increasing, as Norcal works to divert more waste using existing facilities. Also, both the population and the level of business

TABLE 3
WASTE FLOWS FOR SECTORS AND SUBSECTORS

Sector or Subsector	Tons/Year	Source of Tonnage Data
Fantastic 3 + Rear-Loader Service		
Single-family	129,630	Norcal; (Fan3 + rear-loader tons) x customer volume fraction
Multifamily	48,082	Norcal; (Fan3 + rear-loader tons) x customer volume fraction
Commercial, governmental, institutional	59,609	Norcal; (Fan3 + rear-loader tons) x customer volume fraction
Pier 96 Residuals		
Residue from Fantastic 3 material processing	15,934	Norcal
Residue from other material processing	3,513	Norcal
Commercially Collected		
Commercially collected multifamily		
Packer trucks	7,599	Norcal; prorated from all commercial packer truck tonnage based on volumes of customer types
Rolloff trucks	6,530	Norcal; prorated from all commercial compactor truck tonnage based on volumes of customer types
Commercially collected CGI		
Packer trucks	69,765	Norcal
Rolloff trucks (compactor)	59,947	Norcal; all compactors – multifamily portion
Rolloff trucks (loose)	14,338	Norcal; open rolloff tonnage x 1/3
Home cleanout	14,338	Norcal; open rolloff tonnage x 1/3
Bulky Item Collection	2,032	Norcal
Self-Hauled		
Large dumping vehicles		
Commercial self-haul with accounts	16,832	Norcal
Packers from Recreation and Park Department	2,000	Estimated from typical daily volume at Transfer Station
Other City self-hauled waste	2,000	Estimated from general observation at Transfer Station
Department of Public Works		
City litter cans	17,500	Norcal; allowance in agreement with City for DPW tonnage
Street sweepings	12,893	Norcal; data on DPW loads
Litter patrol and broom support	5,526	Norcal; data on DPW loads
DPW packer trucks	3,684	Norcal; data on DPW loads
Wastewater treatment plant screenings	921	Norcal; data on DPW loads
Other DPW materials	5,523	Norcal; data on DPW loads
iMRF		
Residue from iMRF operations	17,468	Norcal
Subtotal	515,664	
Waste not handled by Norcal		
Hillside Landfill	32,145	Disposal Reporting System (CIWMB)
Ox Mountain Landfill	75,490	Disposal Reporting System (CIWMB)
Other Landfills (estimated)	41,850	Disposal Reporting System (CIWMB)
Subtotal	149,485	
Total	665,149	

CIWMB = California Integrated Waste Management Board activity in San Francisco appear to have grown in 2004 and 2005, so these tonnages are likely to increase, offsetting some of the gains in diversion from iMRF and Pier 96 operations. Those who use the results of this study should take tonnage changes and newer diversion programs into consideration.

For various reasons, several of the smaller subsectors were not characterized. Those streams, their approximate sizes (from Norcal, rate year 2003/2004), and related information are provided in Table 4.

TABLE 4
SUBSECTORS NOT CHARACTERIZED

Stream	Tons/Year	Notes
Residue from sorting of public self-haul	35,244	This residue is now processed through the iMRF.
City litter cans	17,500	Surrogate: litter patrol and broom support
Open rolloff loads from C&D sources	14,338	Tonnage for 2003/2004 is estimated as one-third of all open-top rolloffs. This material is now processed through the iMRF.
Bulky item collection	2,032	Surrogate: DPW packer trucks
Other City department self-haul (Port, Housing Authority, School District, etc.)	2,000	Surrogate: Self-hauled waste from businesses

Obtaining and Characterizing Samples

Hand-Sorted Samples

Prior to each sampling date in September 2004 and February 2005, a list was developed of all vehicles of the targeted waste sectors that were expected to arrive at the SFR&D Transfer Station on a given date. As each pre-identified vehicle entered the solid waste facility, the sampling crew supervisor verified information with the driver about the waste collected, and the load was tipped onto the floor of the facility. A staff member at the facility then used a front loader to scoop a sample of the waste, usually weighing between 200 and 300 pounds, and place it on a tarpaulin for sorting.

The sorting work area is shown on the front cover of this report. The data collection crew sorted each sample into 63 material categories. For each sample, the weight of each material was recorded on a form and later transferred to a database. Samples were tracked using a numbering system that indicated the associated waste sectors and collection routes.

Visually Characterized Samples

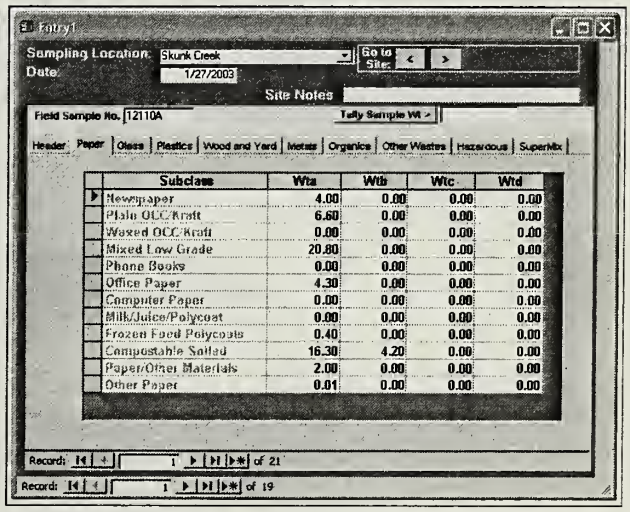
In order to characterize waste from City operations and institutions, specific loads were intercepted as they arrived at the disposal facility. The waste from specified types of businesses was characterized not by targeting specific loads, but by examining loads from those sectors as they arrived at the disposal facilities on the days when data collection was occurring.

The visual observations were performed by the same observer, who has extensive experience with the visual characterization of wastes. Each selected load was tipped onto the floor of the facility, and the composition was estimated in terms of the percent of the load's volume that was perceived to correspond to each of the material categories used in the study. (Volume percentages were converted to weight figures during the later analysis phase of the study.) If the load included opaque trash bags containing waste, a selection of bags from every portion of the load was opened, and the contents examined.

After the initial examination of the load to estimate material volumes as percentages, the observer would sum those percentages. If the result was not 100 percent, the observer would examine the load more closely and use a separate column on the data sheet to enter adjustments. When possible, loads were photographed to provide an objective record of the contents.

Analysis and Reporting

Data from the characterization of samples were entered into a customized database and reviewed for accuracy. At the conclusion of the study, waste composition estimates were calculated for specific subsectors. Composition estimates for the primary waste sectors addressed in the study were then developed by aggregating the data from subsectors using a weighted average procedure based on the annual tonnage in each subsector. Finally, a composition estimate for waste disposed through Norcal was developed by aggregating data from the relevant waste sectors.



Sampling Location: Skunk Creek
Date: 1/27/2003
Site Notes
Field Sample No. 12110A

Subclass	Wta	Wtb	Wtc	Wtd
Newspaper	4.00	0.00	0.00	0.00
Plain OCC/Kraft	6.60	0.00	0.00	0.00
Waxed OCC/Kraft	0.00	0.00	0.00	0.00
Mixed Low Grade	20.80	0.00	0.00	0.00
Phone Books	0.00	0.00	0.00	0.00
Office Paper	4.30	0.00	0.00	0.00
Computer Paper	0.00	0.00	0.00	0.00
Milk/Juice/Polycoat	0.00	0.00	0.00	0.00
Frozen Food Polycoats	0.40	0.00	0.00	0.00
Compostable Soiled	16.30	4.20	0.00	0.00
Paper/Other Materials	2.00	0.00	0.00	0.00
Other Paper	0.01	0.00	0.00	0.00

SECTION II

Characterization Findings

This section presents a summary of the composition of each waste sector and subsector considered in this study. When sufficient data are available, findings highlight the amounts of readily recyclable and compostable materials present. Pie charts are used to indicate the portion of waste from each sector or subsector that corresponds to recyclable paper, other recyclable materials, food, and other compostable materials. In addition, a table lists the 10 most prevalent materials in each sector or subsector. In the pie charts and "top 10" tables, recyclable materials are indicated with blue shading, while compostable materials, including food, are indicated with yellow shading.

For the purposes of this report, recyclable and compostable paper, compostable organics, plastic, and glass are defined as materials that are accepted by the Fantastic 3 Program, and recyclable metals and construction and demolition (C&D) wastes are those that are known to be commonly recycled in San Francisco.

Recyclable paper types include:

- Newspaper
- Plain OCC/Kraft paper
- Waxed OCC/Kraft paper
- High-grade paper
- Mixed low-grade paper

Other recyclable materials include:

- PET bottles
- HDPE natural bottles
- HDPE colored bottles
- Other plastic bottles
- No. 2, 4, and 5 tubs, cups, and lids
- Glass beverage bottles
- Container glass
- Aluminum cans
- Aluminum foil/containers
- Other aluminum
- Other nonferrous items
- Tin/steel cans
- Empty paint and aerosol cans
- Other ferrous items
- Clean wood
- Pallets and crates
- Clean gypsum
- Rock/concrete/bricks

Compostable materials include:

- Food
- Polycoated paper
- Compostable/soiled paper
- Grass
- Prunings
- Stumps and logs

Detailed information about the composition of waste from each sector and subsector can be found in Appendix A, including the percentages of each material and the computed margin of error (shown in the "+/-" column) for each percentage. High margins of error occur when the concentration of a material varies greatly from sample to sample, or when the number of samples is relatively small.

Those who use this report should note the following:

- Measurements of hazardous waste include the weights of the containers holding those wastes.
- The "hazardous waste" category includes painted, varnished, or glued wood products.
- Unless otherwise noted, percentages are based on weight rather than volume.

A. San Francisco Waste Disposed through Norcal

As shown the Figure 2, readily recyclable and compostable materials make up nearly 63 percent of San Francisco waste disposed through Norcal. The largest single component of the waste stream is food, accounting for approximately 27 percent of the total by weight.

Figure 2: Recoverability of San Francisco Waste Disposed through Norcal

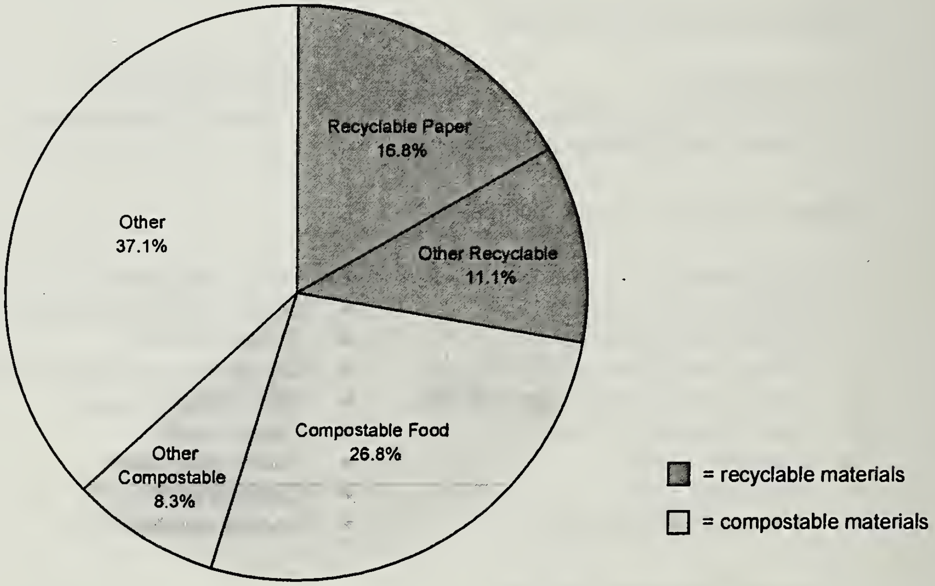


Table 3 shows the 10 most prevalent materials in the overall Norcal waste stream, by weight, along with the cumulative percentages found by adding together the materials in order of prevalence. Notably, food and compostable paper are among the top three materials, and three types of recyclable paper are among the top eight materials. Papers suitable for recycling or composting constitute more than 23 percent of this waste stream.

Although nonpaper recyclables constitute approximately 11 percent of this waste stream, no single type of recyclable material other than paper is present in sufficient amounts to show up as one of the "top 10" materials.

TABLE 5
TOP 10 MATERIALS IN SAN FRANCISCO WASTE DISPOSED THROUGH NORCAL

Material	Percent	Cumulative Percent
Food	26.8%	
Mixed Low-Grade Paper	7.2%	34.1%
Compostable/Soiled Paper	5.5%	39.5%
Other Film	4.5%	44.0%
Newspaper	3.7%	47.8%
Asphaltic Roofing	3.6%	51.4%
Textiles	3.4%	54.8%
Plain OCC/Kraft Paper	3.2%	58.1%
Hazardous Waste	2.9%	61.0%
Composite/Other Products	2.8%	63.8%

B. Waste Disposed through the Fantastic 3 Program

Figure 3 and Table 6 present composition findings for the waste sectors corresponding to the combined set of Fantastic 3 programs, including waste from the single-family, multifamily, and commercial subsectors. A clearer understanding of the individual subsectors can be gained by examining the tables on the following pages and comparing composition findings for each Fantastic 3 subsector to the findings for similar waste collected by other means. Some comparisons are noted in the pages that follow.

Figure 3: Recoverability of Waste Disposed through Fantastic 3 Program

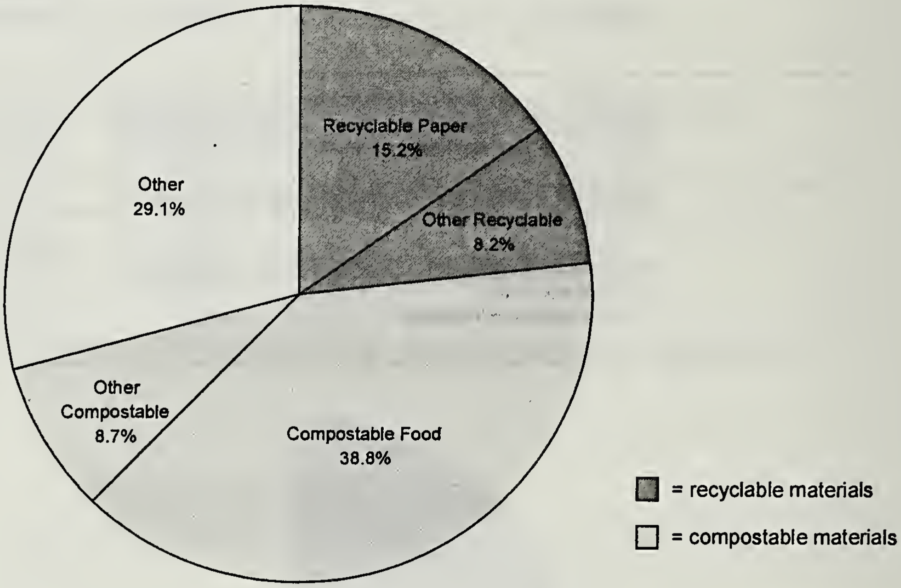


TABLE 6
TOP 10 MATERIALS IN WASTE DISPOSED THROUGH FANTASTIC 3 PROGRAM

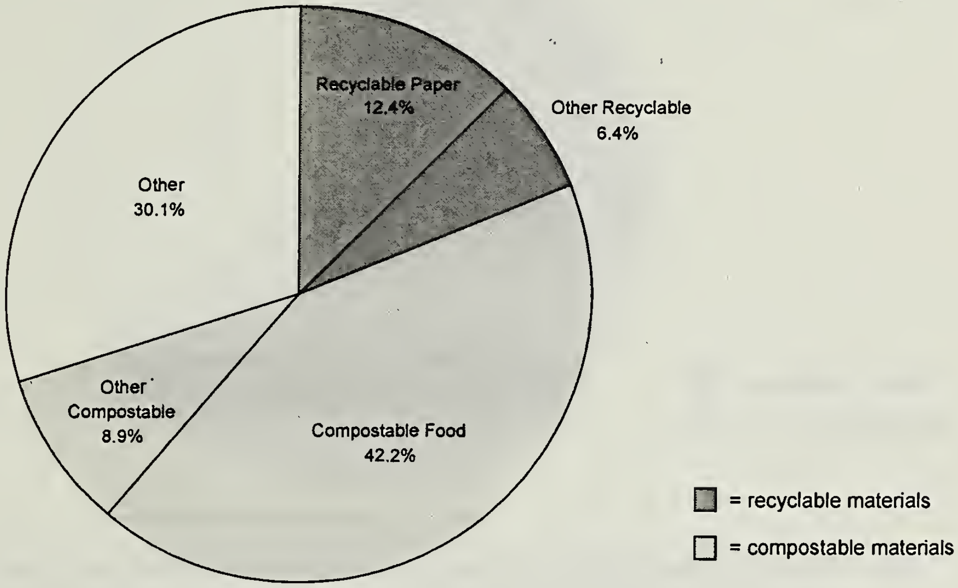
Material	Percent	Cumulative Percent
Food	38.8%	
Mixed Low-Grade Paper	6.7%	45.5%
Compostable/Soiled Paper	6.2%	51.6%
Other Film	5.1%	56.8%
Newspaper	3.8%	60.6%
Disposable Diapers	3.6%	64.1%
Textiles	3.4%	67.6%
Animal By-products	2.7%	70.3%
Plain OCC/Kraft Paper	2.7%	73.0%
Beverage Bottles	2.0%	75.0%

Waste Disposed through Fantastic 3 Single-Family Residential Program

Waste collected through the Fantastic 3 program from single-family residential sources includes a substantially greater amount of food than waste collected through the Fantastic 3 program from multifamily sources. On the other hand, Fantastic 3 single-family waste includes markedly less recyclable paper and other recyclable materials than are collected from multifamily sources.

The total amount of readily recoverable material in the Fantastic 3 single-family waste stream is approximately 70 percent, which is comparable to the percentage for readily recoverable material found in the Fantastic 3 multifamily waste stream.

Figure 4: Recoverability of Waste Disposed through Fantastic 3 Single-Family Residential Program



As shown in Table 7, food and compostable paper are the two most prevalent materials in single-family waste collected through the Fantastic 3 program. Recyclable types of paper together account for three of the top 10 materials in this waste subsector.

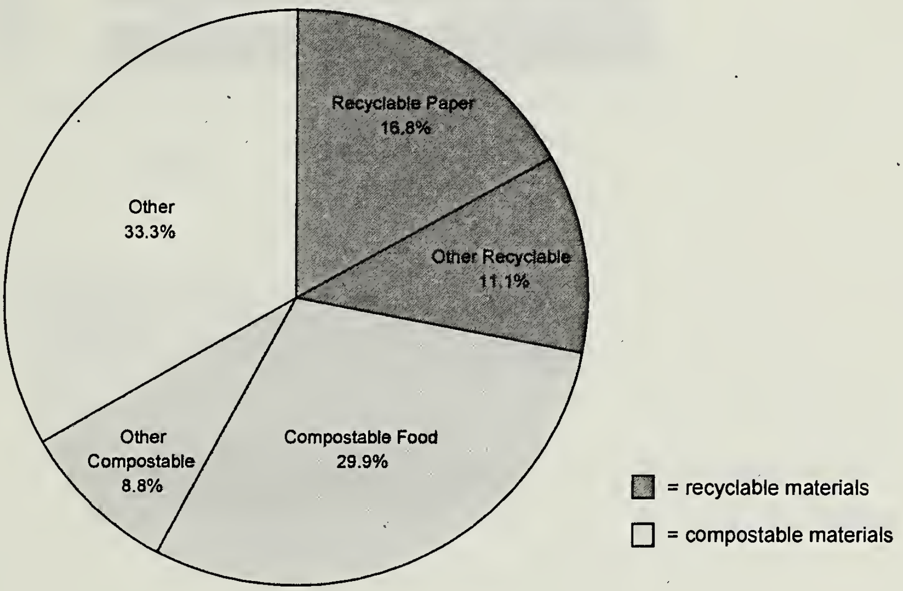
TABLE 7
TOP 10 MATERIALS IN WASTE DISPOSED THROUGH FANTASTIC 3 SINGLE-FAMILY RESIDENTIAL PROGRAM

Material	Percent	Cumulative Percent
Food	42.2%	
Compostable/Soiled Paper	6.4%	48.6%
Mixed Low-Grade Paper	6.0%	54.6%
Other Film	5.2%	59.8%
Disposable Diapers	4.6%	64.5%
Animal By-products	3.8%	68.2%
Textiles	3.2%	71.5%
Newspaper	3.0%	74.5%
Plain OCC/Kraft Paper	2.0%	76.5%
Hazardous Waste	1.9%	78.4%

Waste Disposed through Fantastic 3 Multifamily Residential Program

The amounts of recyclable paper and other readily recyclable materials (16.8 percent and 11.1 percent, respectively) found in multifamily waste collected through the Fantastic 3 program are similar to the amounts found in multifamily waste collected by commercial haulers outside the Fantastic 3 program. The amounts of food and other compostable materials are slightly greater in Fantastic 3 multifamily waste than in other multifamily waste.

Figure 5: Recoverability of Waste Disposed through Fantastic 3 Multifamily Residential Program



As indicated in Table 8, recyclable paper types make up three of the top 10 materials in this waste subsector. Glass beverage bottles constitute an unexpectedly large portion of the waste from Fantastic 3 multifamily customers. Food and compostable paper represent two of the top three materials.

TABLE 8
TOP 10 MATERIALS IN WASTE DISPOSED THROUGH FANTASTIC 3 MULTIFAMILY RESIDENTIAL PROGRAM

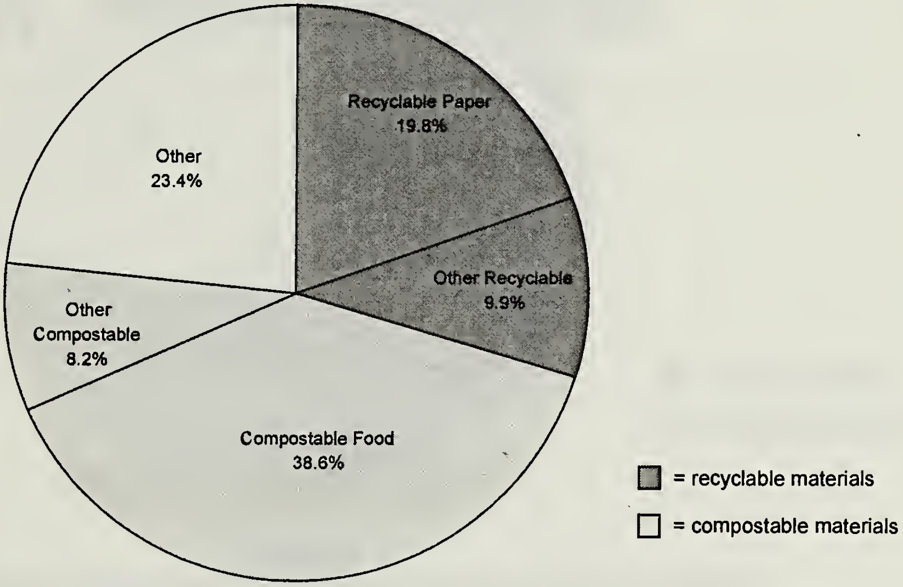
Material	Percent	Cumulative Percent
Food	29.9%	
Mixed Low-Grade Paper	7.4%	37.3%
Compostable/Soiled Paper	6.1%	43.4%
Textiles	5.1%	48.6%
Newspaper	5.0%	53.6%
Other Film	4.7%	58.3%
Beverage Bottles	3.6%	61.9%
Animal By-products	2.7%	64.6%
Plain OCC/Kraft Paper	2.6%	67.1%
Rock/Concrete/Bricks	2.6%	69.7%

Waste Disposed through Fantastic 3 CGI Program

CGI waste collected through the Fantastic 3 program contains approximately the same amount of recyclable paper as is found in CGI waste collected commercially outside the Fantastic 3 program. However, Fantastic 3 CGI waste contains a relatively smaller percentage of other recyclable materials than corresponding non-Fantastic 3 CGI waste.

Fantastic 3 CGI waste contains a great deal more food than other CGI waste collected commercially.

Figure 6: Recoverability of Waste Disposed through Fantastic 3 CGI Program



As shown in Table 9, the most prevalent materials in the waste from CGI participants in the Fantastic 3 program are food, mixed low-grade paper, and compostable paper. Recyclable grades of paper make up four of the top 10 materials for this waste subsector. Recyclable ferrous metal items and glass beverage bottles both appear among the top 10 materials.

TABLE 9
TOP 10 MATERIALS IN WASTE DISPOSED THROUGH FANTASTIC 3 CGI PROGRAM

Material	Percent	Cumulative Percent
Food	38.6%	
Mixed Low-Grade Paper	7.5%	46.1%
Compostable/Soiled Paper	5.6%	51.7%
Other Film	5.4%	57.1%
Newspaper	4.4%	61.6%
Plain OCC/Kraft Paper	4.4%	65.9%
Other Ferrous	3.0%	68.9%
High-Grade Paper	2.5%	71.5%
Beverage Bottles	2.4%	73.9%
Textiles	2.4%	76.3%

C. Waste from the Pier 96 Material Recovery Facility

Figure 7 depicts the residual wastes from the Pier 96 facility, including residuals from operations that process material collected through the Fantastic 3 program as well as operations that process other material. A more detailed examination of the residuals from the two types of operations is presented on the following pages.

Figure 7: Recoverability of Waste from the Pier 96 Material Recovery Facility

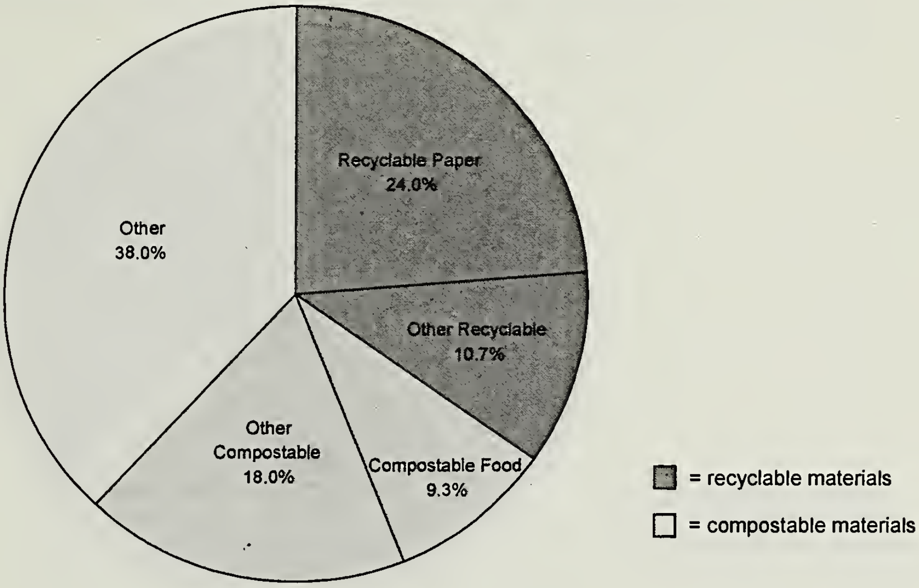


TABLE 10
TOP 10 MATERIALS IN WASTE FROM THE PIER 96 MATERIAL RECOVERY FACILITY

Material	Percent	Cumulative Percent
Compostable/Soiled Paper	16.5%	
Mixed Low-Grade Paper	12.2%	28.7%
Food	9.3%	38.0%
Other Film	8.2%	46.2%
Newspaper	6.4%	52.6%
Textiles	6.4%	59.0%
High-Grade Paper	3.1%	62.1%
Disposable Diapers	2.5%	64.6%
Plain OCC/Kraft Paper	2.3%	66.9%
Sand/Soil/Dirt/Grit/Fines	2.2%	69.1%

Waste from Pier 96 Fantastic 3 Operations

Clearly, food and compostable paper represent a major portion of residuals from recovery operations that process Fantastic 3 material. Recyclable paper types, ferrous metal, and potentially recyclable categories of plastic also are present in notable amounts. However, the characterization process did not evaluate individual items found in samples, such as toys or other miscellaneous plastic products, for their suitability for recycling.

Figure 8: Recoverability of Waste from Pier 96 Fantastic 3 Operations

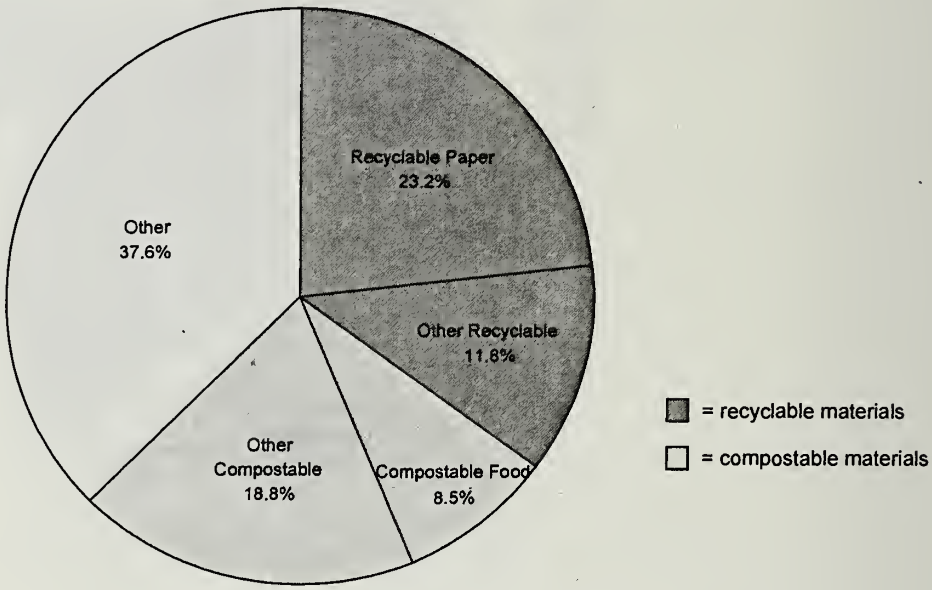


TABLE 11
TOP 10 MATERIALS IN WASTE FROM PIER 96 FANTASTIC 3 OPERATIONS

Material	Percent	Cumulative Percent
Compostable/Soiled Paper	17.7%	
Mixed Low-Grade Paper	12.5%	30.2%
Food	8.5%	38.7%
Other Film	7.5%	46.2%
Textiles	7.3%	53.6%
Newspaper	6.6%	60.2%
Disposable Diapers	2.9%	63.1%
Other Ferrous	2.3%	65.4%
Plastic Products	2.3%	67.7%
Other Rigid Packaging	2.3%	70.0%

Waste from Other Pier 96 Operations

Food and compostable paper are present in significant amounts in this residual stream. Recyclable paper types make up a notable percentage of the residuals. Potentially recyclable categories of plastic also are present, but in smaller amounts than seen in residuals from Fantastic 3 material sent through the Pier 96 facility. The characterization process did not evaluate individual items found in samples, such as articles of clothing, for their suitability for recycling.

Figure 9: Recoverability of Waste from Other Pier 96 Operations

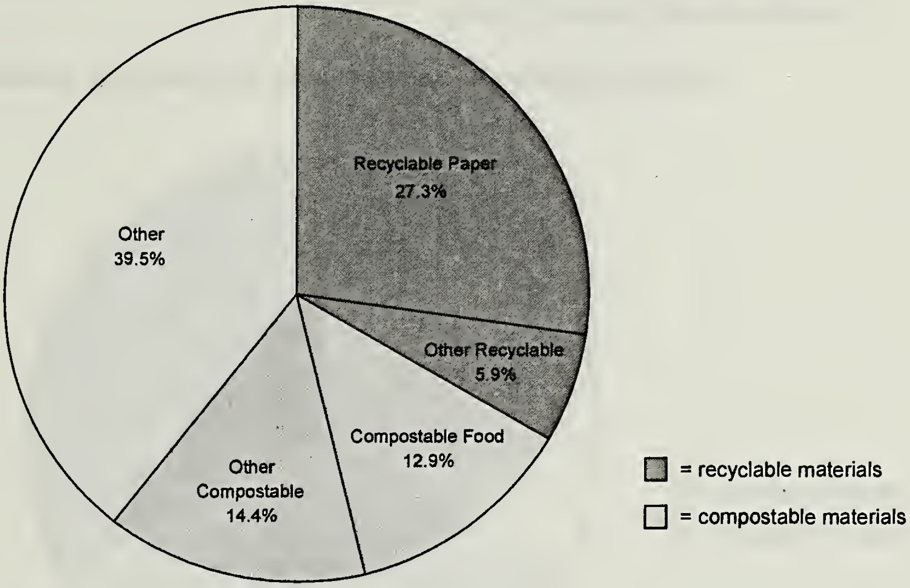


TABLE 12
TOP 10 MATERIALS IN WASTE FROM OTHER PIER 96 OPERATIONS

Material	Percent	Cumulative Percent
Food	12.9%	
Sand/Soil/Dirt/Grit/Fines	11.5%	24.4%
Compostable/Soiled Paper	11.4%	35.8%
Other Film	11.4%	47.2%
Mixed Low-Grade Paper	10.5%	57.7%
High-Grade Paper	7.9%	65.6%
Newspaper	5.6%	71.3%
Plain OCC/Kraft Paper	3.3%	74.6%
Composite/Other Products	2.2%	76.8%
Textiles	2.0%	78.8%

D. Other Commercially Collected Waste

The waste sector "other commercially collected waste" refers to the waste collected from businesses, government, institutions, or multifamily sources by companies that are primarily in the business of waste hauling or waste management. This category also includes waste hauled in rolloff containers from residences by commercial haulers following home cleanout activities.

Figure 10 and Table 13 present findings for the entire sector. This waste sector includes roughly the same percentage of nonfood compostable materials as that collected through the Fantastic 3 program, but relatively less food. However, this sector includes a higher percentage of recyclable materials than the Fantastic 3 sector.

Figure 10: Recoverability of Other Commercially Collected Waste

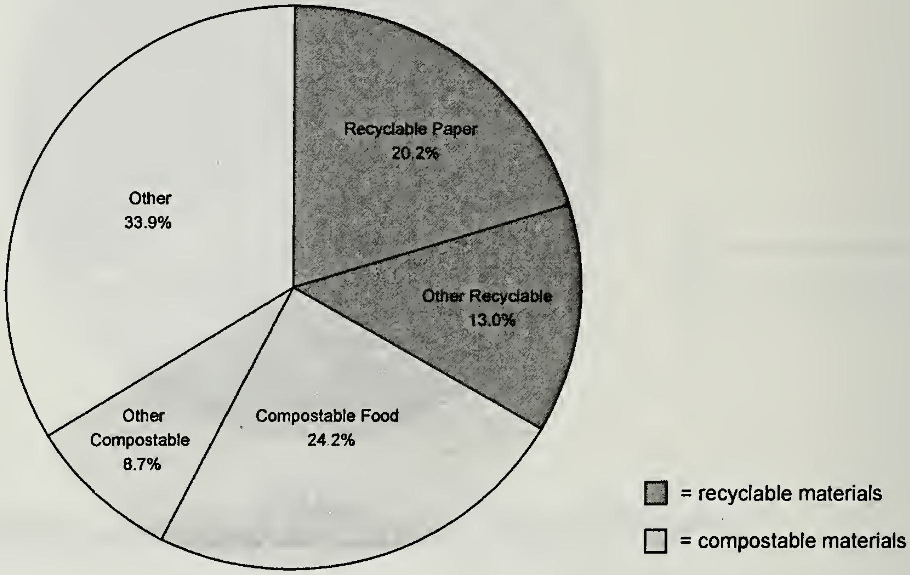


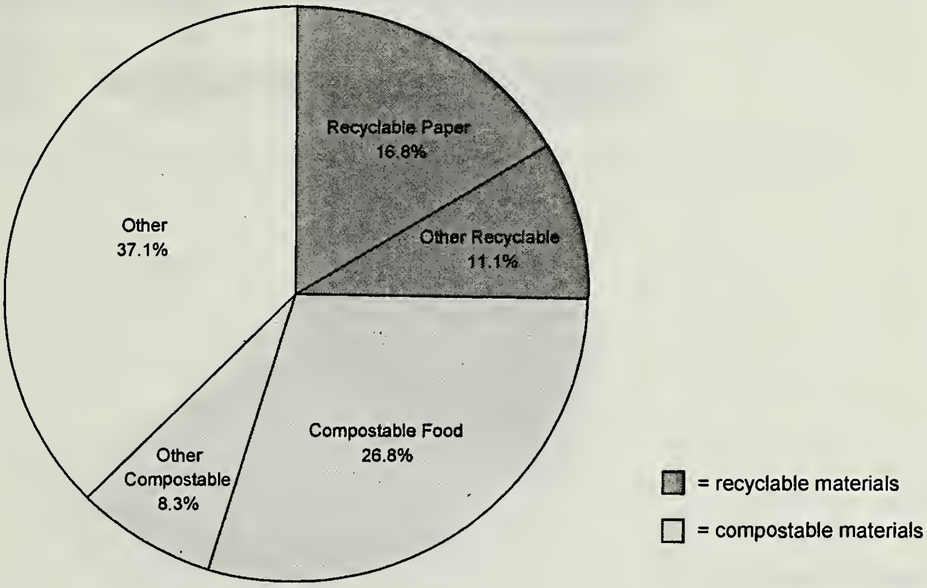
TABLE 13
TOP 10 MATERIALS IN OTHER COMMERCIALLY COLLECTED WASTE

Material	Percent	Cumulative Percent
Food	24.2%	
Mixed Low-Grade Paper	7.6%	31.8%
Compostable/Soiled Paper	5.6%	37.4%
Other Film	5.0%	42.3%
Plain OCC/Kraft Paper	4.5%	46.9%
Newspaper	4.0%	50.9%
Sand/Soil/Dirt/Grit/Fines	3.8%	54.7%
Hazardous Waste	3.5%	58.2%
Plate Glass	2.7%	61.0%
Textiles	2.6%	63.5%

Commercially Collected Multifamily Residential Waste

Based on the sampling results, the percentages of recyclable paper and other readily recyclable materials found in commercially collected multifamily waste are similar to those found in Fantastic 3 waste, regardless of whether the waste was collected from participants in the Fantastic 3 program or not. The amounts of food and other compostable materials are slightly lower in non-Fantastic 3 multifamily waste than in Fantastic 3 multifamily waste.

Figure 11: Recoverability of Commercially Collected Multifamily Residential Waste



As shown in Table 14, food and compostable paper represent two of the 10 most prevalent materials in multifamily waste collected outside the Fantastic 3 program. Likewise, recyclable grades of paper count for two of the materials in the top 10. The presence of hazardous waste as one of the top 10 materials in this waste subsector should be noted and examined in more detail, using data from the toxicity profile that was conducted during the study period.

TABLE 14
TOP 10 MATERIALS IN COMMERCIALLY COLLECTED MULTIFAMILY RESIDENTIAL WASTE

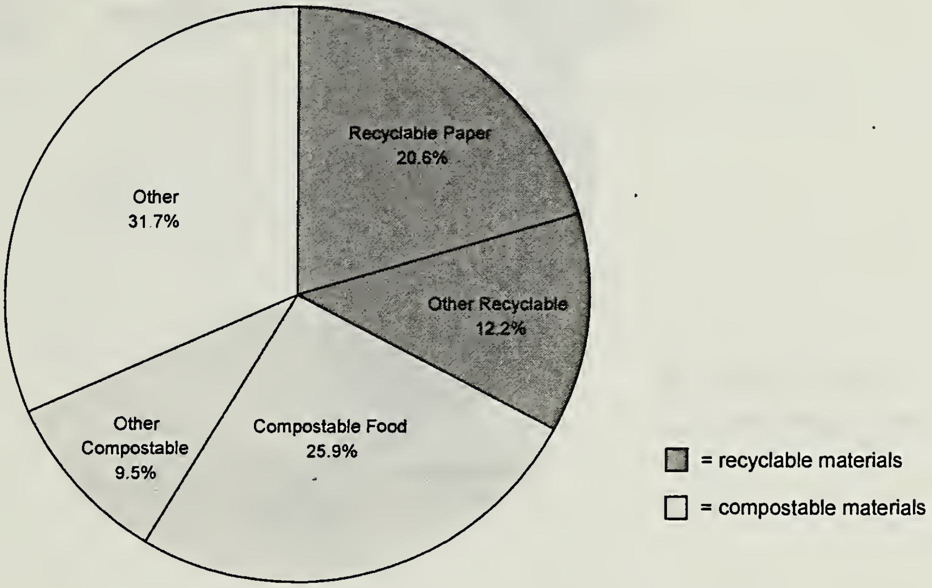
Material	Percent	Cumulative Percent
Food	29.4%	
Mixed Low-Grade Paper	8.7%	38.1%
Textiles	6.6%	44.7%
Hazardous Waste	5.3%	49.9%
Compostable/Soiled Paper	4.5%	54.4%
Other Film	3.6%	58.0%
Composite/Other Metals	3.6%	61.6%
Animal By-products	3.4%	65.0%
Newspaper	3.1%	68.2%
Composite/Other Wood	3.0%	71.2%

Commercially Collected CGI Waste

CGI Waste collected commercially outside the Fantastic 3 program contains approximately the same amount of recyclable paper as is found in CGI waste collected through the Fantastic 3 program. However, non-Fantastic 3 CGI waste contains a greater percentage of other recyclable materials than corresponding Fantastic 3 CGI waste.

Commercially collected CGI waste collected outside the Fantastic 3 program contains substantially less food than Fantastic 3 CGI waste.

Figure 12: Recoverability of Commercially Collected CGI Waste



As with other categories of waste, food and compostable paper represent two of the largest portions of the commercially collected non-Fantastic 3 CGI waste stream. Recyclable types of paper make up three of the top 10 materials.

TABLE 15
TOP 10 MATERIALS IN COMMERCIALLY COLLECTED CGI WASTE

Material	Percent	Cumulative Percent
Food	25.9%	
Mixed Low-Grade Paper	7.4%	33.3%
Compostable/Soiled Paper	6.3%	39.6%
Other Film	5.6%	45.1%
Plain OCC/Kraft Paper	4.4%	49.6%
Newspaper	4.1%	53.7%
Plate Glass	3.3%	57.0%
Sand/Soil/Dirt/Grit/Fines	2.8%	59.7%
Rock/Concrete/Bricks	2.8%	62.5%
Textiles	2.4%	64.8%

Commercially Collected Home Cleanout Waste

Waste from home cleanout operations represents a rich source of recyclable materials, especially recyclable paper types, that could be easily targeted. Several types of recyclable paper appear to be highly prevalent, as well as recyclable ferrous metal items and recyclable wood in the form of pallets and crates. However, it is important to note that these conclusions are based on the visual characterization of only six container loads of waste.

Figure 13: Recoverability of Commercially Collected Home Cleanout Waste

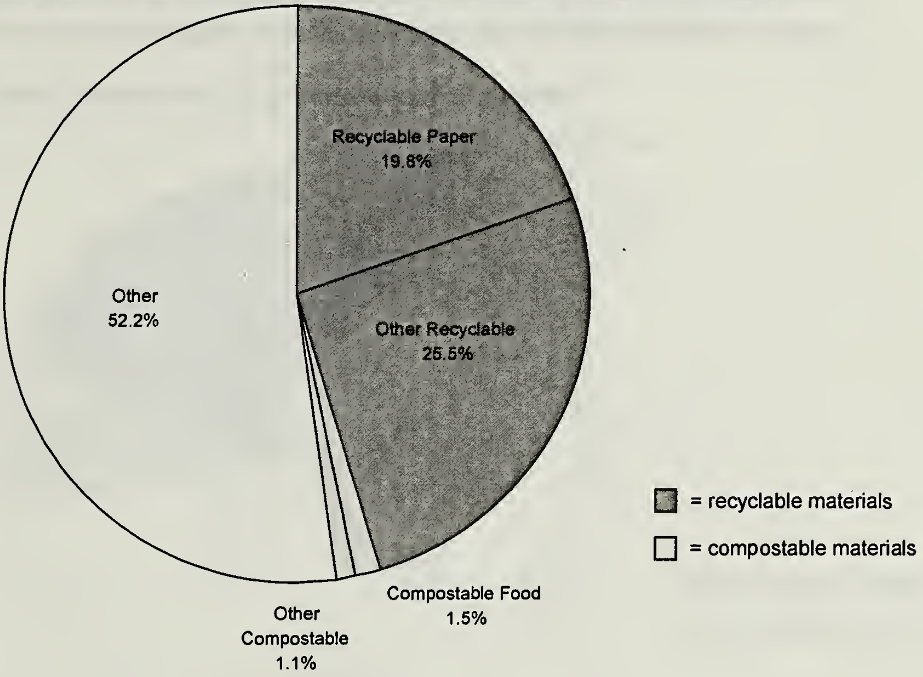


TABLE 16
TOP 10 MATERIALS IN COMMERCIALLY COLLECTED HOME CLEANOUT WASTE

Material	Percent	Cumulative Percent
Sand/Soil/Dirt/Grit/Fines	18.0%	
Hazardous Waste	14.7%	32.7%
Other Ferrous	14.7%	47.4%
Mixed Low-Grade Paper	8.4%	55.8%
Plain OCC/Kraft Paper	7.4%	63.2%
Furniture	5.4%	68.6%
Pallets/Crates	5.3%	74.0%
Newspaper	3.9%	77.9%
Carpet/Upholstery	3.0%	80.9%
Plastic Products	2.9%	83.8%

E. Self-Hauled Waste

The entire self-hauled waste sector was characterized by examining large waste loads from businesses that have individual accounts with Norcal, waste from the Recreation and Park Department packer trucks, and waste from the Department of Public Works. Data from each subsector were combined using a weighted averaging technique to produce the findings shown in Figure 14 and Table 17.

More insight may be gained by examining the composition profiles that appear on the following pages for self-hauled CGI waste and for self-hauled Department of Public Works waste.

Figure 14: Recoverability of Self-Hauled Waste

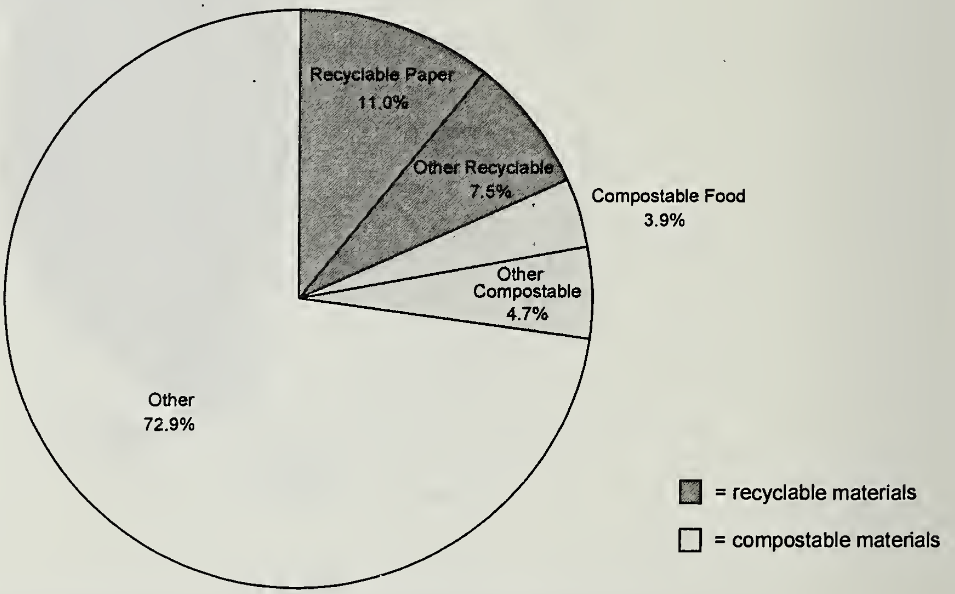


TABLE 17
TOP 10 MATERIALS IN SELF-HAULED WASTE

Material	Percent	Cumulative Percent
Asphaltic Roofing	26.4%	
Composite/Other Products	21.1%	47.5%
Textiles	5.7%	53.3%
Hazardous Waste	4.8%	58.1%
Mixed Low-Grade Paper	4.5%	62.6%
Food	3.9%	66.5%
Sand/Soil/Dirt/Grit/Fines	3.8%	70.3%
Other Ferrous	3.6%	73.9%
Newspaper	3.0%	76.9%
Prunings	2.6%	79.6%

Self-Hauled Waste from Businesses

Based on the examination of nine loads of waste from commercial account holders, recyclable paper and compostable materials represent a very small fraction of waste from this subsector. Recyclable materials other than paper are present in relatively small amounts compared to other waste subsectors considered in this study. By far the largest portion of this waste subsector is asphaltic roofing.

Figure 15: Recoverability of Self-Hauled Waste from Businesses

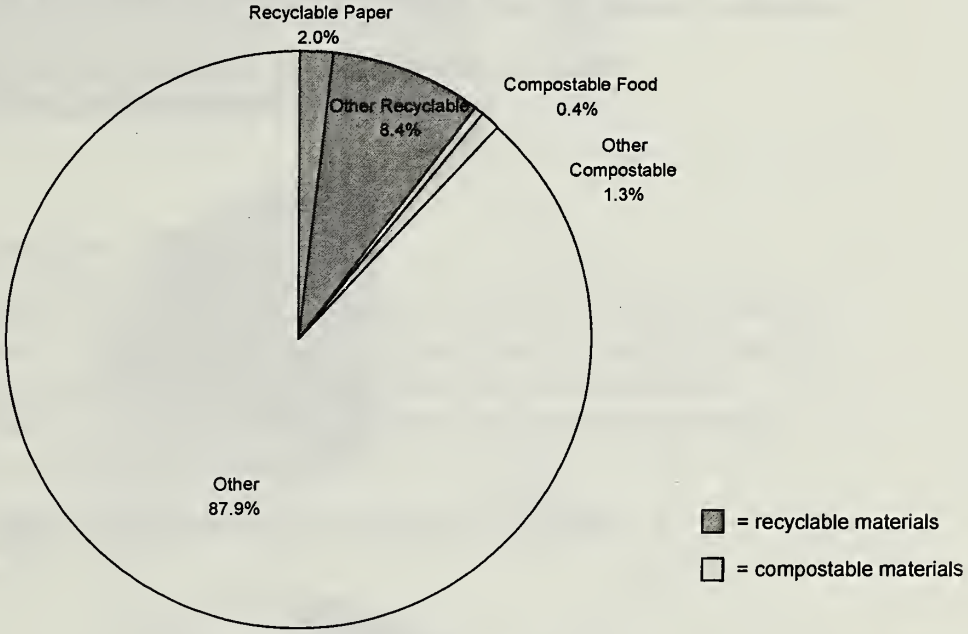


TABLE 18
TOP 10 MATERIALS IN SELF-HAULED WASTE FROM BUSINESSES

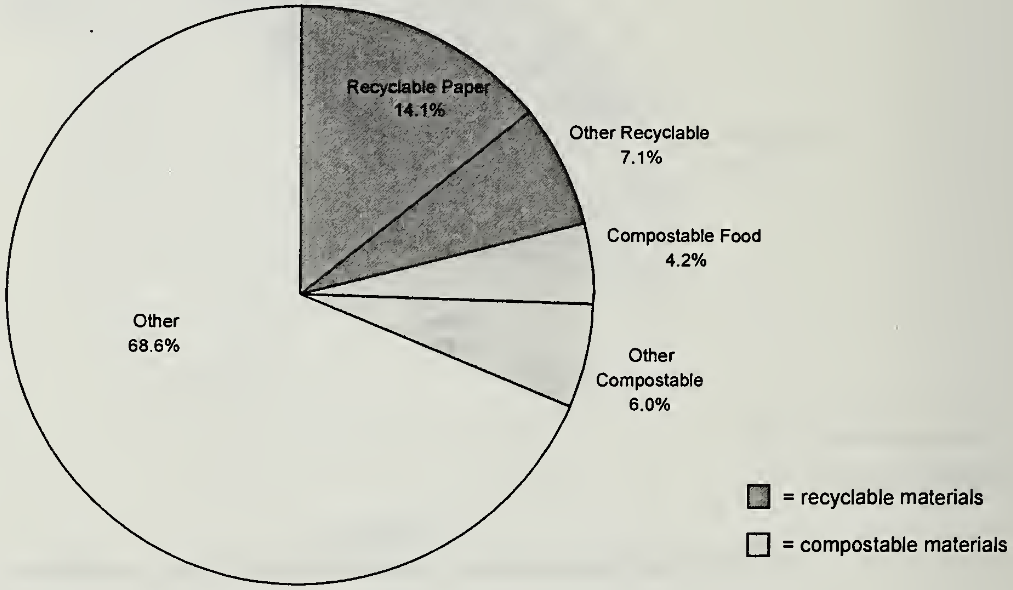
Material	Percent	Cumulative Percent
Asphaltic Roofing	72.2%	
Sand/Soil/Dirt/Grit/Fines	8.3%	80.5%
Clean Wood	3.6%	84.1%
Composite/Other Construction Debris	2.9%	87.0%
Rock/Concrete/Bricks	2.8%	89.9%
Composite/Other Plastics	2.3%	92.1%
Other Ferrous	1.8%	93.9%
Prunings	1.0%	95.0%
Waxed OCC/Kraft Paper	0.9%	95.9%
Composite/Other Metals	0.6%	96.5%

Self-Hauled Waste from the Department of Public Works

Waste from the Department of Public Works was characterized by examining waste from packer trucks and from litter patrol and broom support operations.

In order to produce the findings shown in Figure 16 and Table 19, waste from other sources was also counted in the weighted average composition calculation. Waste from streetside litter baskets was considered to have a composition similar to that of waste from litter patrol and broom support operations. For the purpose of producing this aggregated composition profile, waste from street sweeping vehicles and screenings from wastewater treatment plants were counted as being equivalent to the material category "composite/other products."

Figure 16: Recoverability of Self-Hauled Waste from the Department of Public Works



As can be seen in the figure and table, significant amounts of recyclable and compostable material remain in the overall Department of Public Works self-hauled waste stream.

TABLE 19
TOP 10 MATERIALS IN SELF-HAULED WASTE FROM THE DEPARTMENT OF PUBLIC WORKS

Material	Percent	Cumulative Percent
Composite/Other Products	30.5%	
Asphaltic Roofing	8.7%	39.1%
Textiles	8.2%	47.4%
Hazardous Waste	6.8%	54.2%
Mixed Low-Grade Paper	5.8%	59.9%
Other Ferrous	4.5%	64.4%
Food	4.2%	68.6%
Newspaper	4.0%	72.6%
Prunings	3.4%	76.0%
Plain OCC/Kraft Paper	3.4%	79.4%

F. Waste from the iMRF

The compostable fraction of waste disposed from the iMRF as residue is very small. However, large portions of the waste consist of recyclable low-grade paper and other recyclable materials. The two largest construction/demolition material types present in this waste stream are "rock/concrete/bricks" and "clean wood." In addition, almost 2 percent of this waste stream consists of potentially recyclable OCC/Kraft paper.

Figure 17: Recoverability of Waste from the iMRF

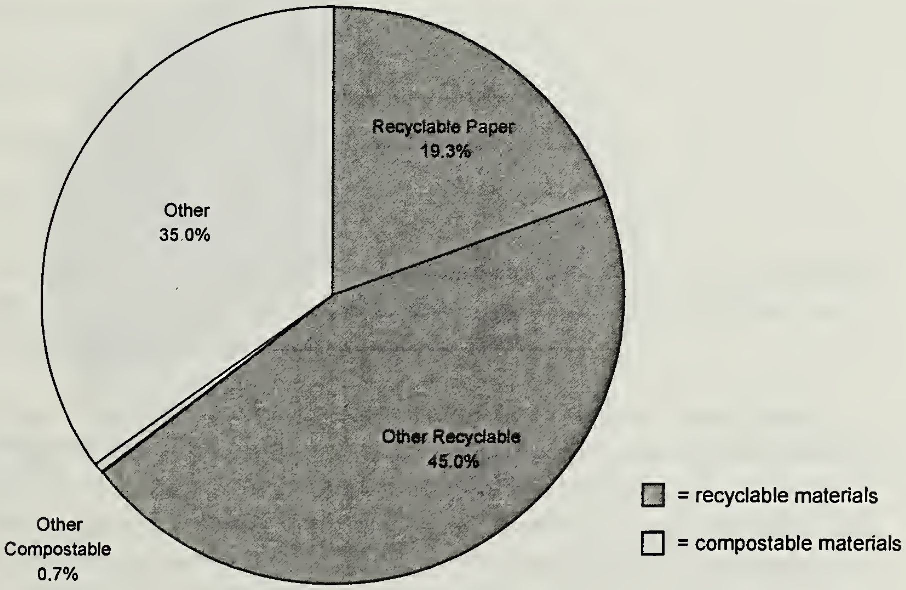


TABLE 20
TOP 10 MATERIALS IN WASTE FROM THE iMRF

Material	Percent	Cumulative Percent
Rock/Concrete/Bricks	30.1%	
Mixed Low-Grade Paper	17.0%	47.1%
Clean Wood	14.0%	61.0%
Carpet/Upholstery	8.2%	69.2%
Painted Gypsum	6.0%	75.3%
Hazardous Waste	5.1%	80.4%
Asphaltic Roofing	4.8%	85.1%
Composite/Other Construction Debris	3.1%	88.2%
Other Film	3.0%	91.2%
Composite/Other Metals	2.4%	93.6%

G. San Francisco Waste Disposed at Hillside Landfill

The single largest material component of this waste sector, rock/concrete/bricks, is also the single greatest recyclable component. Clean gypsum is also present in significant amounts. Recyclable paper types and compostable debris other than food are present in small but significant amounts.

Figure 18: Recoverability of San Francisco Waste Disposed at Hillside Landfill

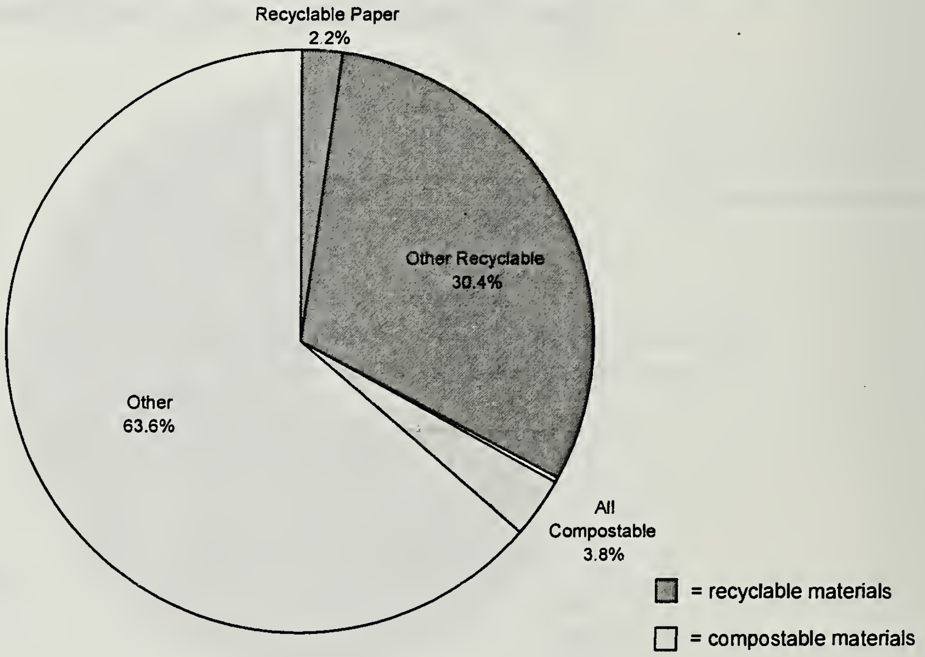


TABLE 21
TOP 10 MATERIALS IN SAN FRANCISCO WASTE DISPOSED AT HILLSIDE LANDFILL

Material	Percent	Cumulative Percent
Rock/Concrete Bricks	25.0%	
Sand/Soil/Dirt/Grit/Fines	20.0%	45.0%
Ceramics	7.5%	52.5%
Painted Gypsum	6.6%	59.1%
Hazardous Waste	5.7%	64.9%
Clean Gypsum	3.6%	68.5%
Asphaltic Roofing	3.6%	72.1%
Appliances	3.4%	75.5%
Furniture	3.3%	78.8%
Composite/Other Construction Debris	2.5%	81.3%

H. Waste from Specific Business Groups

Overview

In discussion with SFE staff, the following business-sector waste streams were targeted for visual characterization:

- Large hotels (served by compactors, hauled by rolloff trucks)
- Small hotels (served by refuse and recycling vehicles collecting from carts, bags, and bins)
- Restaurants (generally with cart/bag/bin service)
- Large retail stores and malls (compactor service)
- Large office buildings with ground-floor retail (compactor service)
- Large office buildings with no retail (compactor service)

In addition, SFE staff requested visual characterization of wastes from a number of specific City operations, including hospitals, the Jail, Municipal Railway yards, etc. These operations were generally served by compactors or open rolloff containers.

The goal was to provide a total of 150 visual characterizations, spread evenly across these sources. In the City operations stream, operations were targeted based on known opportunities for diversion and high disposed tonnage. For the large hotel stream, an effort was made to avoid hotels involved in labor disputes. It was determined that high worker turnover could reduce the effectiveness of the recycling programs at these hotels, thereby resulting in nonrepresentative samples. For the large hotel and the other streams, loads were chosen day by day based on their availability for sampling.

In addition, the materials disposed at the Hillside Landfill in Colma by self-haulers from San Francisco were also characterized visually. Self-hauled wastes disposed at the SFR&D Transfer Station were not characterized visually because these wastes are processed for recycling in a variety of ways.

Large Hotels

A total of 21 large hotel samples were taken by visual characterization. Two samples were deleted after the decision was made to exclude large hotels that were involved in labor disputes. It was determined that high worker turnover could reduce the effectiveness of the recycling programs at these hotels, thereby resulting in nonrepresentative samples. As a result, the total number of analyzed samples, across both seasons, was 19. In many cases, individual hotels were characterized in fall 2004 and again in spring 2005. Because no seasonally driven variation was apparent, the samples were treated as a single group.

The market niche for an individual hotel was usually apparent from its waste stream. Hotels used largely by business people had wastes that included newspapers, courier packets, legal briefs, marketing data, etc. The wastes from hotels used by vacationers exhibited shopping bags and boxes, beverage containers, and takeout food containers. A few high-end hotels apparently provide spa services that disposed of slippers, pillows, and cosmetic product containers. Other hotel services that caused variations in wastes included restaurants, catering, convention space, and retail. A few hotels appeared to have active bars, based on the substantial number of glass beverage bottles concentrated in pockets within their waste loads. The Cathedral Hill Hotel and the “W” Hotel were notable in this regard.

On average, these materials had the highest estimated weights:

Food	44%
Low-grade paper (news & mixed)	27%
Compostable/soiled paper	5%
High-grade paper	5%
Glass bottles and containers	4%

For most of these materials, concentrations varied considerably from one hotel to another, a reflection of the market niche and the varying services present at each hotel. However, the variation may also reflect the presence of recycling programs at certain hotels.

Other materials present in smaller but noticeable quantities were corrugated cardboard (apparently from embedded retailers) and textiles (discarded clothing and spa-wear).

Small Hotels

For this study, small hotels were defined as those hotels and motels that are too small to have compactor service. In recent years, most small hotels have been converted from bin service to cart service for compatibility with Norcal’s refuse collection system. Hence, the targeted small hotels were limited to those with cart service in order to facilitate sample collection.

The original goal number of samples from this sector was 22. The ideal approach for sample collection and analysis would have been for Norcal to collect 22 separate samples from a representative subset of all small hotels and bring each sample to the transfer station for analysis. However, this method of sample collection was error-prone, and the cost to Norcal would have been very high. Instead, the following approach was used. Norcal staff examined its collection routes in areas known to have high concentrations of small hotels and identified several clusters of small hotels that had collection on the same day. In discussion with study team staff, clusters were identified that would focus on three distinct types of small hotels: small luxury hotels near theaters and Union Square shops, larger family and group-oriented hotels and motels on or near the Van Ness and Lombard Street corridor, and hotels for low-income residents. One cluster of each type was chosen for collection and sampling. Each cluster had six to 10 hotels that were expected to set out refuse on the same route and at the same time.

Subsampling within each cluster was done after the cluster load was delivered to the transfer station. Each load, typically 4 to 8 cubic yards in volume, was separated into four piles, and each pile was considered a sample. To the extent possible, waste from each hotel was placed in one pile only. For the visual characterization, all bags were opened and the materials examined.

Using this method, with three clusters collected each season, a total of 24 samples were analyzed. On average, these materials had the highest estimated weights:

Low-grade paper (news & mixed)	36%
Food	24%
Compostable/soiled paper	7%
Glass bottles and containers	6%
Rigid plastic containers	4%
High-grade paper	4%
Textiles	4%

The concentration of food was noticeably lower than in large hotels, primarily because small hotels are much less likely to have an onsite restaurant. (Takeout food containers and associated plastic bags were readily apparent in most of these samples.) Most of the textiles appeared to be clothing discarded in the low-income cluster. Concentrations of paper and containers varied considerably from sample to sample. Some visitor-oriented small hotels apparently had bars, in-room mini-bars, or gatherings of guests that produced substantial amounts of beer, wine, and liquor bottles.

Restaurants

Because there are more than 3,000 restaurants in San Francisco, this business sector was evaluated as a distinct stream. Most restaurants produce far less than the volume of waste that would make compactor service economical. Consequently, the restaurants had to be sampled in a manner similar to that for the small hotels (i.e., by defining clusters and separating cluster loads into samples at the transfer station).

The three restaurant clusters were chosen from three demographically distinct parts of the city:

- The West Portal neighborhood shopping district, which serves residents in the area west of Twin Peaks.
- Clement Street near 25th Avenue, which serves residents in the Richmond District.
- Bush Street at Kearny Street, where the Financial District abuts Chinatown, and restaurants largely serve a mix of business and tourist customers.

Cluster loads were brought to the transfer station and separated into samples in the same manner as described above for small hotels. In addition, one restaurant that shared compactor service with office space was analyzed separately. (This compactor was sampled two times in all; one sample was placed in the "office with retail" category, and one in the "restaurant" category.)

Using this method, with three clusters collected each season and one compactor, a total of 25 samples were analyzed. On average, these materials had the highest estimated weights:

Food	85%
Compostable/soiled paper	4%
Low-grade paper (news & mixed)	3%
Glass bottles and containers	1%
Rigid plastic containers	1%
Cardboard	1%

The data were reasonably consistent among samples, indicating that most restaurants generate an amount of food waste that far outweighs the remaining materials. The relatively low amount of cardboard indicates (and visual observations confirm) that most restaurants discard very little cardboard; it appears that they are finding ways to recycle it.

It was also apparent from the visual observations that the refuse from many small restaurants includes residential wastes. However, it was not possible to determine from the samples whether these were wastes from the same building or from other sources.

Large Retail Stores and Malls

These sources included retailers that occupy all, or nearly all, of a building, as well as shopping mall areas such as Stonestown and San Francisco Centre. Two entertainment complexes with substantial shopping areas (Metreon and Kabuki) and one cinema (1000 Van Ness) were also included. To assure a focus on the largest retailers, only those with rolloff compactor service were targeted, and grocery stores were excluded.

Twenty-four samples were taken by observing the contents of rolloff containers serving these retail sources. Because there were a limited number of retailers with rolloff service, many were sampled once each season (twice in all).

On average, these materials had the highest estimated weights:

Food	42%
Low-grade paper (news & mixed)	16%
Plastic products	7%
Cardboard	6%
Compostable/soiled paper	5%

The high quantities of food reflect the large amounts of food discarded from malls with food service. Of the 24 samples, seven had less than 20 percent food and 10 had more than 60 percent.

Several retail sources had loads consisting of a few very specific types of waste. The most striking examples were the loads from 22 Fourth Street, which were composed almost entirely of plastic coat hangers and plastic film.

Most retailers produced relatively little cardboard, but a few had substantial amounts. Twenty of the 24 samples were less than 10 percent cardboard by weight (with six of those having 1 percent or less), but four samples had more than 10 percent cardboard. The sources for these four samples included at least one retailer reputed to have a strong recycling program. This points up the need for close internal supervision to assure that employees recycle cardboard, if discarding it into a compactor is an alternative.

Large Office Buildings with Ground-Floor Retail

Samples were drawn from high-rise office buildings that have retail outlets at street level and are served by compactors. An initial list of high-rise buildings was taken from the website maintained by Emporis, a company that indexes high-rise structures around the world as a resource for real estate professionals and the general public. The list was reviewed by staff at Golden Gate Disposal and subdivided into lists of office buildings with and without ground-floor retail. Golden Gate Disposal staff also identified the buildings whose discards are taken to Pier 96; those buildings were not included in this study.

The resulting list was surprisingly small, with only 10 buildings eligible for sampling. Since the goal had been to obtain 20 to 22 samples during this study, many of the eligible buildings were sampled twice. A non-high-rise office building with a substantial restaurant attached (Il Fornaio, at 1265 Battery Street) was included once in this sample. Within the logistical constraints of the study, it was only possible to obtain 14 samples from this sector.

The dominant group of buildings in this sector was Embarcadero Center, Buildings 1 through 4. These buildings have restaurants among their retail mix. Several of the other buildings in this sector also have food service, either in restaurants or employee dining rooms. As a consequence, wastes from these buildings contain a substantial amount of food and food-service material, making them extremely difficult to process at the Pier 96 recycling facility. As a result, these wastes continue to be taken to the SFR&D Transfer Station for disposal.

On average, these materials had the highest estimated weights:

Food	45%
Low-grade paper (news & mixed)	17%
High-grade paper	9%
Compostable/soiled paper	6%
Cardboard	4%

The buildings with the most food waste typically had a kitchen or restaurant(s) on site. Although food was present at substantial levels (at least 30 percent) in most samples, cardboard was less consistent, and high-grade paper was very inconsistent. Four of the samples had less than 5 percent high-grade paper by weight, but three other samples had more than 15 percent high-grade paper.

The Ferry Building is a special case within this category. It has a number of food shops and other retailers on the ground floor, and various offices within the upper floors of the complex. Building management is actively involved in providing recycling services, and efforts are being made to increase those services. Nevertheless, the samples indicated a substantial amount of food waste (more than 50 percent by weight) and a noticeable amount of high-grade paper from the offices.

Large Office Buildings with No Retail

Samples were drawn from high-rise office buildings that do not have retail outlets and are served by compactors. The list of candidate buildings was developed from the website maintained by Emporis, as described in the previous section.

The resulting list had a total of 11 buildings eligible for sampling. One other newly reopened building was added in the spring 2005 session, and one compactor that was delivering to Pier 96 in fall 2004 returned to the SFR&D Transfer Station in spring 2005. Since the goal had been to obtain 20 to 22 samples during this study, many of the eligible buildings were sampled twice, and a few of the most frequently pulled compactors were sampled a third time. Within the logistical constraints of the study, 21 samples were obtained from this sector.

Several of the buildings in this group had employee dining areas with kitchens, and the wastes from most of the others included a significant amount of food, primarily employee meals from takeout food sources or from home. On average, these materials had the highest estimated weights:

Food	38%
Low-grade paper (news & mixed)	22%
High-grade paper	12%
Compostable/soiled paper	9%

In addition, the fraction of rigid plastic containers was a remarkably high 13 percent by volume. Due to the low density of these materials, the percentage by weight was only 2.9 percent on average; nonetheless, there is a noteworthy waste reduction opportunity for these materials. Most of the containers in this category were drinking-water bottles and other beverage bottles that appeared to have been supplied for use in meetings and at workstations. In a few samples, it appeared that someone had collected these bottles with the intent of recycling them but had not been able to do so.

City Operations

City staff targeted a number of City operations for visual characterization. Emphasis was placed on the largest operations (i.e., those that produce the largest amounts of waste).

In the discussions of specific streams presented below, all percentages derived from the raw visual characterization data are by volume.

Housing Authority

The San Francisco Housing Authority operates several stakeside dump-bed trucks that pick up abandoned wastes from public housing projects. In the fall 2004 round of visual characterization, five of these loads were characterized.

There was a wide variety of material types in these loads, but four types of materials predominated:

Plain OCC/Kraft	19%
Prunings	14%
Furniture	11%
Low-grade paper	7%

Also, much of the material in these loads was household refuse in plastic trash bags.

These data were recorded at the SFR&D Transfer Station prior to salvage by workers. A portion of the OCC/Kraft, prunings, and furniture are diverted by SFR&D. Low-grade paper was thinly scattered throughout the loads, in trash bags and loose, and may not be economically feasible to divert after delivery by the San Francisco Housing Authority.

Broom Support and Litter Patrol Pickup Trucks

In conjunction with street-sweeping work, a fleet of pickup trucks operated by the Bureau of Street Environmental Services patrols city streets in advance of street sweeping machines to remove large objects that the sweeping machines cannot handle. These trucks also support work crews that clean heavily littered areas and collect abandoned wastes such as bags of trash, furniture, etc. In the fall 2004 round of visual characterization, 10 of these loads were characterized.

There was a wide variety of material types in these loads, but three types of materials predominated:

Prunings	16%
Textiles	15%
Plain OCC/Kraft	13%

In general, the high average values for these materials reflect very high amounts in a few loads. For example, two loads had OCC/Kraft concentrations of 55 and 49 percent, respectively. In most other loads there was very little cardboard.

These data were recorded at SFR&D prior to salvage by workers. Some materials in these loads are diverted by SFR&D.

DPW Packer Trucks

The Department of Public Works operates several packer trucks that collect abandoned wastes and perform related community services, such as collecting weeds and trash cleaned from community gardens. These trucks also serve as "mother ships" for the broom support and littler patrol pickup trucks, which can bring wastes to a nearby packer rather than make the longer trip to the SFR&D Transfer Station. In the spring 2005 round of visual characterization, four of these loads were characterized.

In these loads, two types of materials were seen in substantial amounts:

Furniture	19%
Mattresses	14%

In general, the concentrations of these materials were similar in most loads. Typically, these loads are discharged directly into the transfer station pit, which prevents salvage or diversion of materials. Most of the furniture and some of the mattresses and box springs had been badly damaged by the packer truck during loading. However, many of these objects appeared to be unusable due to wear, staining, and other damage prior to collection.

Two of the four observed loads contained a noticeable amount of compostable prunings (between 10 and 20 percent), apparently collected from community gardens and median weeding projects.

Institutions

The term "institutions" is used here to mean publicly operated facilities that house and feed relatively large numbers of people. Several institutions managed by City departments generate substantial amounts of waste and were selected for observation during this study. For each institution, the contents of a specific compactor were observed twice.

San Francisco General Hospital

The "Kitchen" compactor was observed in fall 2004 and spring 2005. The two loads differed significantly. The first had a substantial amount of medical waste that appeared to be from intensive care, emergency, and/or operating rooms. The second had a much greater fraction of material that appeared to be from food preparation and general patient care activities (gowns, gloves, and some dressing kits), but no "red bag" regulated infectious waste or other material that indicated intensive medical procedures.

The two loads had several materials in common: plastic film, rigid plastic containers (primarily beverage containers), cardboard boxes, and food waste. Each of these materials constituted less than 10 percent of the total, except for film, which was between 10 and 15 percent.

Laguna Honda Hospital

The "Housekeeping" compactor was observed in fall 2004 and spring 2005. The two loads differed somewhat. The first had more waste that appeared to be from patient care, and the second had more material that appeared to be from food preparation and general residential and administrative activities.

There were similar and potentially significant levels of several materials in the two loads. Average concentrations of these materials are listed below:

Rigid plastic containers	11%
Compostable/soiled paper	8%
Low-grade paper	7%
Food waste	7%

Both of the loads also contained a substantial fraction of disposable adult diapers and related products.

San Francisco Jails

The compactor from 850 Bryant Street was observed in fall 2004 and spring 2005. There was a higher proportion of food in the 2004 observation, but in most other respects the two loads were reasonably similar. The five most prevalent materials were:

Food	23%
Plastic films	14%
Low-grade paper	13%
Compostable/soiled paper	13%
Rigid plastic containers	9%

The rigid plastic containers and the paper products were largely single-serving food and beverage containers used by inmates. The Jails building uses a large number of heavy clear plastic bags to contain refuse, and these contributed to the high volume of plastic films. There were also noticeable quantities of reusable dairy crates as well as office paper and beverage bottles (apparently from the staff dining area).

Youth Guidance Center

This compactor was observed twice in spring 2005. In most respects, the two loads were reasonably similar. The most prevalent materials were:

Rigid plastic containers	22%
Compostable/soiled paper	20%
Low-grade paper	11%
Food	9%
Composite/other paper	9%
Plastic films	9%
Metal containers/foil	7%

The rigid plastic containers and the paper products were largely single-serving food and beverage containers used by residents. Dairy products, especially milk and yogurt, were the main sources. The metal containers/foil category was largely made up of institutional-size food cans ("No. 10 cans"). These occupied a great deal of volume because they had not been flattened. One load was nearly 10 percent prunings (ice plant and crabgrass), apparently from weed control efforts at the facility. These prunings were found in plastic trash bags.

Operations

The term "operations" is used here to mean facilities that are used to process materials, maintain equipment, or store and dispatch vehicles. The facilities targeted for this study were selected by City staff.

Muni Yards

Three facilities that clean, repair, and store vehicles used by the San Francisco Municipal Railway were targeted: the San Jose Avenue, Indiana Street, and Harrison Street facilities. One load from each facility's compactor was characterized. Three materials were prevalent in all three loads:

Low-grade paper	31%
Plain OCC/Kraft	20%
Compostable/soiled paper	19%

The low-grade and compostable/soiled papers appeared to be largely from the cleanout of buses and light-rail vehicles. The cardboard was clearly from boxes of supplies used at the facilities.

There were numerous large objects such as tires and bus windowpanes in these loads. These would cause problems for a sorting system that uses conveyors, such as Recycle Central at Pier 96.

Water Department Corporation Yard

One sample was observed from the Water Department Corporation Yard at 1990 Newcomb Street. The facility is served by an open-top rolloff container that holds office wastes and materials brought to the yard from repair jobsites around the city. In general, this sample appeared to reflect a very low level of effort at waste diversion. The most prevalent materials were:

Low-grade paper	22%
Rigid plastic containers	10%
Plastic films	9%
Compostable/soiled paper	8%

There was also a noticeable amount of wood, some of it pressure-treated, as well as glass and metal beverage containers. It appeared that a portion of the waste was from residential sources. Also, a small volume (estimated at 1 percent) of the waste was oily metal chips that appeared to be from a machine shop; a big-screen television, with picture tube, was also in the observed load.

Wastewater Treatment Plant

The City operates three wastewater treatment facilities; the Southeast Water Pollution Control Plant is the largest, and its operational solid waste disposal needs are served by two open-top rolloff containers. The container from 1700 Jerrold Avenue was observed in fall 2004, and the container from 1701 Jerrold was observed in spring 2005.

The two loads were quite different. The load from 1700 contained a substantial amount of construction and demolition material, apparently from the remodeling of some space within the facility. The load from 1701 had numerous pallets and crates, some cardboard (much of it boxes that had contained labware), and a number of sacks that had a paper outer layer and a plastic lining. Both loads contained prunings, apparently from the facility grounds, and a noticeable amount of refuse that appeared to be from residential sources.

Fire Department

Several years ago, the SFE made a major effort to reduce wastes from fire stations and enable them to make full use of the Fantastic 3 program by setting out compostables, recyclable containers, and paper separately from refuse. To gain insight into how well the Department is using the program, refuse from five stations in various parts of the city was collected as a composite sample.

Visually, the most striking component of this sample was the large number of purple gloves used by EMT's and paramedics based at the fire stations. On a volume basis, the most prevalent material was compostable/soiled paper, at more than 30 percent. Most of this was paper towels. The gloves and other plastic items were the second-greatest constituent, at 16 percent, and rigid plastics—mainly beverage containers—were third, at 12 percent.

Food was only 5 percent, in spite of ample evidence that meals are prepared in the fire stations. Most of the small amount of recyclable paper appeared to originate from one station (720 Moscow Street), and there was virtually no cardboard in this sample. In summary, it appears that aside from beverage containers, most of the fire stations are actively recycling.

Recreation and Park Department

The Recreation and Park Department is the source of several distinct waste streams that may be reducible through very specific source separation and source reduction efforts. For this study, several loads and parts of loads from subsections of Recreation and Park's refuse collection routes were examined in spring 2005. Because each of these samples was unique, computing the average composition would not be meaningful. However, the following observations were made for specific samples:

- At Buena Vista Park (and possibly other parks), where vehicle access into the park is difficult, gardeners place grass and weeds in plastic "lawn and leaf" bags, which are collected as refuse.

- Illegal dumping, especially by small contractors and renovating homeowners, is an obvious problem. The examined loads were from Golden Gate Park and nearby large park areas (Great Highway, Lake Merced, etc.), and every load had ½ to 1 cubic yard of C&D or renovation waste, including carpet and padding, roofing material, etc. Recreation and Park staff voiced the observation that McLaren Park is much more heavily affected by these wastes.

- Illegal dumping of household waste also occurs. Recreation and Park staff indicated that such dumping is especially prevalent along Great Highway.

- In refuse from several locations, a substantial volume of beverage containers was found. Exact sources could not be determined, but likely sources appeared to be Buena Vista Park, Great Highway, and Lake Merced. The average concentration of beverage containers, across all Recreation and Park samples, was approximately 15 percent by volume. (The data indicate 20 percent, but this includes rigid plastics such as picnic plates.)

- Picnic wastes are a noticeable component, but across all of the observed samples, the average concentration of food wastes was approximately 5 percent by volume.

A load from the rolloff container that serves the Corporation Yard within Golden Gate Park was also examined. Compared to the other Recreation and Park Department samples, the Corporation Yard load contained a noticeable amount of corrugated cardboard as well as more animal wastes and prunings (primarily pulled weeds, but also trimmed branches).

APPENDIX A

Detailed Waste Characterization Tables

Recyclable materials are indicated in blue, and compostable materials are indicated in yellow. For the purposes of this report, recyclable paper, plastic, and glass are defined as materials that are accepted by the Fantastic 3 Program, and recyclable metals and C&D wastes are those that are known to be commonly recycled in San Francisco.

Table A-1: Characterization of San Francisco Waste Disposed through Norcal

Material	Est. Pct.	+ / -	Est. Tons
Paper	**24.3%**		**125,177**
Newspaper	3.7%	0.7%	19,287
Plain OCC/Kraft Paper	3.2%	0.4%	16,675
Waxed OCC/Kraft Paper	0.9%	0.6%	4,458
High-Grade Paper	1.7%	0.3%	8,660
Mixed Low-Grade Paper	7.2%	0.7%	37,360
Polycoated Paper	0.8%	0.1%	4,326
Compostable/Soiled Paper	5.5%	0.6%	28,312
Composite/Other Paper	1.2%	0.2%	6,098
Plastic	**10.5%**		**54,315**
PET Bottles	0.5%	0.1%	2,759
HDPE Natural Bottles	0.2%	0.0%	989
HDPE Colored Bottles	0.2%	0.0%	854
Other Plastic Bottles	0.0%	0.0%	136
#2, 4, & 5 Tubs, Cups, and Lids	0.4%	0.1%	1,860
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.6%	0.1%	2,973
Nonfood Expanded Polystyrene	0.2%	0.1%	1,221
Other Food Service Plastics	0.7%	0.1%	3,761
Other Rigid Packaging	0.7%	0.3%	3,667
Clean Shopping/Dry Cleaner Bags	0.2%	0.0%	1,018
Other Clean Polyethylene Film	0.5%	0.2%	2,762
Other Film	4.5%	0.5%	23,156
Plastic Products	1.0%	0.2%	5,282
Composite/Other Plastic	0.8%	0.2%	3,878
Glass	**3.3%**		**17,142**
Beverage Bottles	1.8%	0.3%	9,181
Container Glass	0.3%	0.1%	1,331
Plate Glass	1.0%	1.0%	4,992
Composite/Other Glass	0.3%	0.2%	1,638
Metals	**4.2%**		**21,910**
Aluminum Cans	0.2%	0.0%	858
Aluminum Foil/Containers	0.2%	0.0%	872
Other Aluminum	0.1%	0.0%	266
Other Nonferrous	0.1%	0.0%	345
Tin/Steel Cans	0.6%	0.1%	3,121
Empty Paint & Aerosol Cans	0.1%	0.0%	258
Empty Propane and Other Tanks	0.0%	0.0%	8
Other Ferrous	2.0%	0.7%	10,111
Composite/Other Metals	1.2%	0.3%	6,070
Number of samples:	291		
Organics	**33.0%**		**170,305**
Grass	0.2%	0.1%	871
Prunings	1.7%	0.6%	8,997
Food	26.8%	1.9%	138,242
Disposable Diapers	2.1%	0.4%	10,965
Animal By-products	1.4%	0.5%	7,378
Composite/Other Organic	0.7%	0.5%	3,852
Other Materials	**9.5%**		**49,015**
Tires	0.0%	0.0%	224
Rubber	0.3%	0.1%	1,570
Textiles	3.4%	0.8%	17,753
Carpet/Upholstery	1.6%	0.5%	8,040
Apparel	0.4%	0.1%	2,120
Furniture	0.6%	0.4%	3,138
Mattresses	0.1%	0.0%	506
Appliances	0.2%	0.2%	1,188
Composite/Other Products	2.8%	0.1%	14,477
CDL Wastes	**12.2%**		**62,776**
Clean Wood	1.6%	0.5%	8,085
Pallets & Crates	0.6%	0.3%	2,882
Stumps & Logs	0.0%	0.0%	85
Composite/Other Wood	0.6%	0.3%	3,314
Clean Gypsum	0.3%	0.2%	1,359
Painted Gypsum	0.2%	0.2%	1,120
Fiberglass Insulation	0.0%	0.0%	64
Rock/Concrete/Bricks	2.3%	1.0%	11,996
Asphaltic Roofing	3.6%	0.8%	18,585
Ceramics	0.3%	0.2%	1,706
Sand/Soil/Dirt/Grit/Fines	2.1%	1.1%	10,974
Composite/Other Construction Debris	0.5%	0.3%	2,608
Hazardous Wastes	**2.9%**		**15,022**
Hazardous Waste	2.9%	0.9%	15,022
Total	100.0%		**515,664**

Table A-2: Characterization of Waste Disposed through Fantastic 3 Program

Material	Est. Pct.	+ / -	Est. Tons
Paper	**23.4%**		**66,631**
Newspaper	3.8%	0.5%	9,011
Plain OCC/Kraft Paper	2.7%	0.4%	6,390
Waxed OCC/Kraft Paper	0.3%	0.1%	786
High-Grade Paper	1.7%	0.3%	4,005
Mixed Low-Grade Paper	6.7%	0.6%	15,852
Polycoated Paper	0.9%	0.1%	2,090
Compostable/Soiled Paper	6.2%	0.6%	14,627
Composite/Other Paper	1.2%	0.2%	2,869
Plastic	**11.6%**		**27,646**
PET Bottles	0.6%	0.1%	1,454
HDPE Natural Bottles	0.2%	0.0%	538
HDPE Colored Bottles	0.2%	0.0%	542
Other Plastic Bottles	0.0%	0.0%	80
#2, 4, & 5 Tubs, Cups, and Lids	0.4%	0.1%	1,009
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.6%	0.1%	1,502
Nonfood Expanded Polystyrene	0.2%	0.1%	565
Other Food Service Plastics	0.9%	0.1%	2,107
Other Rigid Packaging	0.5%	0.1%	1,262
Clean Shopping/Dry Cleaner Bags	0.3%	0.1%	630
Other Clean Polyethylene Film	0.5%	0.2%	1,144
Other Film	5.1%	0.4%	12,212
Plastic Products	1.0%	0.3%	2,420
Composite/Other Plastic	0.9%	0.2%	2,182
Glass	**2.7%**		**6,396**
Beverage Bottles	2.0%	0.3%	4,797
Container Glass	0.4%	0.1%	868
Plate Glass	0.1%	0.1%	291
Composite/Other Glass	0.2%	0.1%	440
Metals	**3.7%**		**8,735**
Aluminum Cans	0.2%	0.0%	528
Aluminum Foil/Containers	0.2%	0.0%	551
Other Aluminum	0.1%	0.0%	140
Other Nonferrous	0.1%	0.1%	148
Tin/Steel Cans	0.7%	0.1%	1,747
Empty Paint & Aerosol Cans	0.0%	0.0%	108
Empty Propane and Other Tanks	0.0%	0.0%	8
Other Ferrous	1.3%	0.9%	3,168
Composite/Other Metals	1.0%	0.2%	2,337
Number of samples:	115		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**47.4%**		**112,604**
Grass	0.1%	0.1%	340
Prunings	1.5%	0.6%	3,636
Food	38.8%	2.7%	92,055
Disposable Diapers	3.6%	0.8%	8,482
Animal By-products	2.7%	0.9%	6,521
Composite/Other Organic	0.7%	0.2%	1,570
Other Materials	**6.7%**		**13,491**
Tires	0.0%	0.0%	22
Rubber	0.3%	0.2%	666
Textiles	3.4%	0.6%	8,107
Carpet/Upholstery	1.2%	0.6%	2,901
Apparel	0.7%	0.2%	1,571
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.1%	0.1%	224
Composite/Other Products	0.0%	0.0%	1
CDL Wastes	**3.5%**		**8,291**
Clean Wood	0.5%	0.3%	1,238
Pallets & Crates	0.0%	0.0%	44
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.7%	0.5%	1,642
Clean Gypsum	0.3%	0.3%	810
Painted Gypsum	0.0%	0.0%	2
Fiberglass Insulation	0.0%	0.0%	18
Rock/Concrete/Bricks	0.7%	0.8%	1,744
Asphaltic Roofing	0.0%	0.0%	65
Ceramics	0.6%	0.4%	1,318
Sand/Soil/Dirt/Grit/Fines	0.5%	0.3%	1,106
Composite/Other Construction Debris	0.1%	0.1%	304
Hazardous Wastes	**1.9%**		**4,528**
Hazardous Waste	1.9%	0.6%	4,528
Total	100.0%		237,321

Table A-3: Characterization of Waste Disposed through Fantastic 3 Single-Family Residential Program

Material	Est. Pct.	+ / -	Est. Tons
Paper	**20.6%**		**26,683**
Newspaper	3.0%	0.7%	3,952
Plain OCC/Kraft Paper	2.0%	0.5%	2,538
Waxed OCC/Kraft Paper	0.1%	0.1%	92
High-Grade Paper	1.3%	0.3%	1,726
Mixed Low-Grade Paper	6.0%	0.9%	7,814
Polycoated Paper	0.7%	0.1%	942
Compostable/Soiled Paper	6.4%	0.8%	8,323
Composite/Other Paper	1.0%	0.2%	1,295
Plastic	**11.3%**		**14,659**
PET Bottles	0.5%	0.1%	670
HDPE Natural Bottles	0.2%	0.1%	212
HDPE Colored Bottles	0.3%	0.1%	344
Other Plastic Bottles	0.0%	0.0%	47
#2, 4, & 5 Tubs, Cups, and Lids	0.4%	0.1%	565
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.7%	0.2%	906
Nonfood Expanded Polystyrene	0.2%	0.1%	257
Other Food Service Plastics	0.9%	0.2%	1,151
Other Rigid Packaging	0.6%	0.2%	789
Clean Shopping/Dry Cleaner Bags	0.2%	0.1%	242
Other Clean Polyethylene Film	0.2%	0.2%	316
Other Film	5.2%	0.4%	6,739
Plastic Products	1.1%	0.5%	1,434
Composite/Other Plastic	0.8%	0.2%	988
Glass	**1.9%**		**2,526**
Beverage Bottles	1.3%	0.3%	1,627
Container Glass	0.4%	0.1%	549
Plate Glass	0.1%	0.1%	92
Composite/Other Glass	0.2%	0.1%	258
Metals	**3.1%**		**4,000**
Aluminum Cans	0.2%	0.0%	247
Aluminum Foil/Containers	0.2%	0.1%	305
Other Aluminum	0.0%	0.0%	20
Other Nonferrous	0.1%	0.1%	128
Tin/Steel Cans	0.7%	0.1%	876
Empty Paint & Aerosol Cans	0.1%	0.0%	69
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	0.8%	0.3%	1,025
Composite/Other Metals	1.0%	0.3%	1,331
Number of samples:	40		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**53.1%**		**68,801**
Grass	0.2%	0.1%	214
Prunings	1.6%	0.8%	2,082
Food	42.2%	3.6%	54,664
Disposable Diapers	4.6%	1.3%	6,026
Animal By-products	3.8%	1.6%	4,893
Composite/Other Organic	0.7%	0.3%	922
Other Materials	**5.6%**		**7,313**
Tires	0.0%	0.0%	22
Rubber	0.2%	0.1%	261
Textiles	3.2%	0.8%	4,199
Carpet/Upholstery	1.2%	0.8%	1,518
Apparel	0.9%	0.3%	1,106
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.2%	0.2%	209
Composite/Other Products	0.0%	0.0%	0
CDL Wastes	**2.5%**		**3,216**
Clean Wood	0.6%	0.4%	780
Pallets & Crates	0.0%	0.0%	0
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.4%	0.2%	543
Clean Gypsum	0.5%	0.5%	696
Painted Gypsum	0.0%	0.0%	2
Fiberglass Insulation	0.0%	0.0%	18
Rock/Concrete/Bricks	0.1%	0.1%	102
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.4%	0.2%	533
Sand/Soil/Dirt/Grit/Fines	0.2%	0.3%	309
Composite/Other Construction Debris	0.2%	0.2%	233
Hazardous Wastes	**1.9%**		**2,432**
Hazardous Waste	1.9%	0.5%	2,432
Total	100.0%		**129,630**

Table A-4: Characterization of Waste Disposed through Fantastic 3 Multifamily Residential Program

Material	Est. Pct.	+ / -	Est. Tons
Paper	**25.1%**		**12,086**
Newspaper	5.0%	1.6%	2,421
Plain OCC/Kraft Paper	2.6%	0.6%	1,232
Waxed OCC/Kraft Paper	0.3%	0.3%	131
High-Grade Paper	1.6%	0.4%	762
Mixed Low-Grade Paper	7.4%	1.3%	3,543
Polycoated Paper	0.9%	0.2%	452
Compostable/Soiled Paper	6.1%	1.6%	2,954
Composite/Other Paper	1.2%	0.3%	590
Plastic	**11.6%**		**5,554**
PET Bottles	0.9%	0.2%	431
HDPE Natural Bottles	0.2%	0.1%	118
HDPE Colored Bottles	0.3%	0.1%	125
Other Plastic Bottles	0.0%	0.0%	18
#2, 4, & 5 Tubs, Cups, and Lids	0.3%	0.1%	162
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.6%	0.2%	276
Nonfood Expanded Polystyrene	0.4%	0.2%	194
Other Food Service Plastics	0.8%	0.3%	396
Other Rigid Packaging	0.5%	0.2%	239
Clean Shopping/Dry Cleaner Bags	0.2%	0.1%	117
Other Clean Polyethylene Film	0.5%	0.6%	242
Other Film	4.7%	1.0%	2,265
Plastic Products	0.8%	0.4%	404
Composite/Other Plastic	1.2%	0.8%	566
Glass	**4.3%**		**2,063**
Beverage Bottles	3.6%	0.9%	1,716
Container Glass	0.5%	0.2%	249
Plate Glass	0.0%	0.0%	2
Composite/Other Glass	0.2%	0.2%	96
Metals	**3.4%**		**1,614**
Aluminum Cans	0.3%	0.1%	156
Aluminum Foil/Containers	0.2%	0.1%	117
Other Aluminum	0.1%	0.1%	56
Other Nonferrous	0.0%	0.0%	2
Tin/Steel Cans	0.8%	0.3%	390
Empty Paint & Aerosol Cans	0.0%	0.0%	18
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	0.8%	0.7%	371
Composite/Other Metals	1.1%	0.6%	505
Number of samples:	21		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**37.6%**		**18,064**
Grass	0.3%	0.3%	123
Prunings	1.4%	1.1%	694
Food	29.9%	6.3%	14,392
Disposable Diapers	2.4%	1.2%	1,163
Animal By-products	2.7%	1.5%	1,281
Composite/Other Organic	0.9%	0.7%	411
Other Materials	**8.4%**		**4,022**
Tires	0.0%	0.0%	0
Rubber	0.6%	0.7%	292
Textiles	5.1%	1.7%	2,472
Carpet/Upholstery	1.9%	2.0%	923
Apparel	0.7%	0.4%	335
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.0%	0.0%	0
Composite/Other Products	0.0%	0.0%	0
CDL Wastes	**7.2%**		**3,480**
Clean Wood	0.1%	0.1%	71
Pallets & Crates	0.0%	0.0%	0
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	1.9%	2.6%	904
Clean Gypsum	0.2%	0.4%	114
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	2.6%	3.7%	1,227
Asphaltic Roofing	0.0%	0.1%	20
Ceramics	1.1%	1.7%	534
Sand/Soil/Dirt/Grit/Fines	1.2%	1.1%	567
Composite/Other Construction Debris	0.1%	0.1%	43
Hazardous Wastes	**2.5%**		**1,199**
Hazardous Waste	2.5%	1.7%	1,199
Total	100.0%		**48,082**

Table A-5: Characterization of Waste Disposed through Fantastic 3 CGI Program

Material	Est. Pct.	+ / -	Est. Tons
Paper	**28.3%**		**16,861**
Newspaper	4.4%	0.7%	2,638
Plain OCC/Kraft Paper	4.4%	0.9%	2,620
Waxed OCC/Kraft Paper	0.9%	0.4%	562
High-Grade Paper	2.5%	1.0%	1,517
Mixed Low-Grade Paper	7.5%	1.3%	4,495
Polycoated Paper	1.2%	0.3%	695
Compostable/Soiled Paper	5.6%	0.8%	3,350
Composite/Other Paper	1.7%	0.6%	984
Plastic	**12.5%**		**7,433**
PET Bottles	0.6%	0.1%	353
HDPE Natural Bottles	0.3%	0.1%	207
HDPE Colored Bottles	0.1%	0.0%	72
Other Plastic Bottles	0.0%	0.0%	15
#2, 4, & 5 Tubs, Cups, and Lids	0.5%	0.2%	282
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.5%	0.2%	320
Nonfood Expanded Polystyrene	0.2%	0.1%	114
Other Food Service Plastics	0.9%	0.2%	561
Other Rigid Packaging	0.4%	0.1%	234
Clean Shopping/Dry Cleaner Bags	0.5%	0.3%	271
Other Clean Polyethylene Film	1.0%	0.7%	586
Other Film	5.4%	1.0%	3,209
Plastic Products	1.0%	0.5%	581
Composite/Other Plastic	1.1%	0.4%	628
Glass	**3.0%**		**1,807**
Beverage Bottles	2.4%	0.7%	1,454
Container Glass	0.1%	0.1%	69
Plate Glass	0.3%	0.5%	197
Composite/Other Glass	0.1%	0.1%	87
Metals	**5.2%**		**3,121**
Aluminum Cans	0.2%	0.1%	124
Aluminum Foil/Containers	0.2%	0.1%	129
Other Aluminum	0.1%	0.1%	65
Other Nonferrous	0.0%	0.0%	19
Tin/Steel Cans	0.8%	0.3%	481
Empty Paint & Aerosol Cans	0.0%	0.0%	22
Empty Propane and Other Tanks	0.0%	0.0%	8
Other Ferrous	3.0%	3.3%	1,773
Composite/Other Metals	0.8%	0.4%	501
Number of samples:	54		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**43.2%**		**25,739**
Grass	0.0%	0.0%	2
Prunings	1.4%	1.2%	860
Food	38.6%	5.5%	22,999
Disposable Diapers	2.2%	1.7%	1,294
Animal By-products	0.6%	0.4%	347
Composite/Other Organic	0.4%	0.2%	238
Other Materials	**3.6%**		**2,156**
Tires	0.0%	0.0%	0
Rubber	0.2%	0.1%	112
Textiles	2.4%	1.0%	1,436
Carpet/Upholstery	0.8%	0.6%	461
Apparel	0.2%	0.1%	131
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.0%	0.0%	16
Composite/Other Products	0.0%	0.0%	1
CDL Wastes	**2.7%**		**1,595**
Clean Wood	0.6%	0.6%	387
Pallets & Crates	0.1%	0.1%	44
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.3%	0.2%	195
Clean Gypsum	0.0%	0.0%	0
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	0.7%	0.9%	415
Asphaltic Roofing	0.1%	0.1%	46
Ceramics	0.4%	0.2%	251
Sand/Soil/Dirt/Grit/Fines	0.4%	0.3%	230
Composite/Other Construction Debris	0.0%	0.1%	28
Hazardous Wastes	**1.5%**		**897**
Hazardous Waste	1.5%	1.3%	897
Total	100.0%		59,609

Table A-6: Characterization of Waste from the Pier 96 Material Recovery Facility

Material	Est. Pct.	+ / -	Est. Tons
Paper	**43.1%**		**8,381**
Newspaper	6.4%	2.2%	1,251
Plain OCC/Kraft Paper	2.3%	0.9%	446
Waxed OCC/Kraft Paper	0.0%	0.0%	0
High-Grade Paper	3.1%	1.3%	601
Mixed Low-Grade Paper	12.2%	1.8%	2,366
Polycoated Paper	1.1%	0.6%	206
Compostable/Soiled Paper	16.5%	9.7%	3,218
Composite/Other Paper	1.5%	0.9%	293
Plastic	**21.2%**		**4,116**
PET Bottles	0.8%	0.1%	149
HDPE Natural Bottles	0.3%	0.1%	50
HDPE Colored Bottles	0.2%	0.0%	34
Other Plastic Bottles	0.1%	0.1%	18
#2, 4, & 5 Tubs, Cups, and Lids	1.8%	1.2%	346
#1, 3, 6, & 7 Tubs, Cups, and Lids	1.1%	0.6%	223
Nonfood Expanded Polystyrene	0.3%	0.1%	63
Other Food Service Plastics	1.6%	1.2%	316
Other Rigid Packaging	2.0%	1.2%	396
Clean Shopping/Dry Cleaner Bags	0.7%	0.4%	135
Other Clean Polyethylene Film	0.6%	0.3%	113
Other Film	8.2%	1.0%	1,592
Plastic Products	2.2%	0.6%	430
Composite/Other Plastic	1.3%	0.5%	249
Glass	**2.2%**		**426**
Beverage Bottles	2.0%	0.8%	380
Container Glass	0.1%	0.1%	13
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.2%	0.2%	33
Metals	**6.3%**		**1,225**
Aluminum Cans	0.3%	0.0%	61
Aluminum Foil/Containers	0.3%	0.1%	56
Other Aluminum	0.1%	0.1%	15
Other Nonferrous	0.3%	0.4%	53
Tin/Steel Cans	1.5%	1.1%	295
Empty Paint & Aerosol Cans	0.1%	0.2%	28
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	2.0%	1.5%	397
Composite/Other Metals	1.6%	0.4%	321
Number of samples:	18		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**12.9%**		**2,505**
Grass	0.0%	0.0%	0
Prunings	0.4%	0.2%	81
Food	9.3%	5.0%	1,812
Disposable Diapers	2.5%	1.5%	479
Animal By-products	0.2%	0.3%	48
Composite/Other Organic	0.4%	0.4%	85
Other Materials	**8.4%**		**1,631**
Tires	0.0%	0.0%	0
Rubber	0.3%	0.3%	62
Textiles	6.4%	2.3%	1,240
Carpet/Upholstery	0.7%	0.5%	144
Apparel	0.7%	1.0%	137
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.2%	0.4%	47
Composite/Other Products	0.0%	0.0%	0
CDL Wastes	**5.3%**		**1,026**
Clean Wood	0.1%	0.1%	25
Pallets & Crates	0.0%	0.0%	0
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.9%	0.3%	183
Clean Gypsum	0.0%	0.0%	1
Painted Gypsum	0.2%	0.4%	45
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	0.9%	1.4%	166
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.0%	0.0%	5
Sand/Soil/Dirt/Grit/Fines	2.2%	1.6%	434
Composite/Other Construction Debris	0.9%	1.5%	167
Hazardous Wastes	**0.7%**		**137**
Hazardous Waste	0.7%	0.8%	137
Total	100.0%		**19,447**

Table A-7: Characterization of Waste from Pier 96 Fantastic 3 Operations

Material	Est. Pct.	+ / -	Est. Tons
Paper	**43.2%**		**6,889**
Newspaper	6.6%	2.6%	1,052
Plain OCC/Kraft Paper	2.1%	1.1%	331
Waxed OCC/Kraft Paper	0.0%	0.0%	0
High-Grade Paper	2.0%	1.5%	323
Mixed Low-Grade Paper	12.5%	2.0%	1,997
Polycoated Paper	1.0%	0.7%	154
Compostable/Soiled Paper	17.7%	11.9%	2,816
Composite/Other Paper	1.4%	1.1%	216
Plastic	**21.4%**		**3,411**
PET Bottles	0.8%	0.1%	127
HDPE Natural Bottles	0.3%	0.1%	42
HDPE Colored Bottles	0.2%	0.0%	29
Other Plastic Bottles	0.1%	0.1%	17
#2, 4, & 5 Tubs, Cups, and Lids	2.1%	1.4%	330
#1, 3, 6, & 7 Tubs, Cups, and Lids	1.2%	0.7%	189
Nonfood Expanded Polystyrene	0.3%	0.2%	50
Other Food Service Plastics	1.7%	1.5%	268
Other Rigid Packaging	2.3%	1.4%	362
Clean Shopping/Dry Cleaner Bags	0.8%	0.5%	129
Other Clean Polyethylene Film	0.7%	0.3%	107
Other Film	7.5%	1.0%	1,191
Plastic Products	2.3%	0.7%	362
Composite/Other Plastic	1.3%	0.6%	208
Glass	**2.3%**		**360**
Beverage Bottles	2.0%	1.0%	318
Container Glass	0.1%	0.1%	10
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.2%	0.3%	32
Metals	**7.0%**		**1,122**
Aluminum Cans	0.3%	0.0%	50
Aluminum Foil/Containers	0.3%	0.1%	47
Other Aluminum	0.1%	0.2%	15
Other Nonferrous	0.3%	0.5%	52
Tin/Steel Cans	1.7%	1.3%	278
Empty Paint & Aerosol Cans	0.2%	0.3%	27
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	2.3%	1.8%	370
Composite/Other Metals	1.8%	0.4%	283
Number of samples:	4		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**12.4%**		**1,976**
Grass	0.0%	0.0%	0
Prunings	0.2%	0.1%	30
Food	8.5%	6.0%	1,360
Disposable Diapers	2.9%	1.8%	466
Animal By-products	0.3%	0.3%	47
Composite/Other Organic	0.5%	0.5%	72
Other Materials	**9.7%**		**1,541**
Tires	0.0%	0.0%	0
Rubber	0.3%	0.3%	50
Textiles	7.3%	2.8%	1,169
Carpet/Upholstery	0.9%	0.6%	143
Apparel	0.8%	1.2%	132
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.3%	0.5%	47
Composite/Other Products	0.0%	0.0%	0
CDL Wastes	**3.3%**		**529**
Clean Wood	0.1%	0.1%	16
Pallets & Crates	0.0%	0.0%	0
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	1.0%	0.3%	166
Clean Gypsum	0.0%	0.0%	0
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	1.0%	1.7%	156
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.0%	0.0%	0
Sand/Soil/Dirt/Grit/Fines	0.2%	0.2%	30
Composite/Other Construction Debris	1.0%	1.8%	166
Hazardous Wastes	**0.7%**		**108**
Hazardous Waste	0.7%	1.0%	108
Total	100.0%		**15,934**

Table A-8: Characterization of Waste from Other Pier 96 Operations

Material	Est. Pct.	+ / -	Est. Tons
Paper	**42.5%**		**1,491**
Newspaper	5.6%	1.7%	198
Plain OCC/Kraft Paper	3.3%	1.0%	115
Waxed OCC/Kraft Paper	0.0%	0.0%	0
High-Grade Paper	7.9%	2.7%	278
Mixed Low-Grade Paper	10.5%	3.8%	368
Polycoated Paper	1.5%	0.5%	53
Compostable/Soiled Paper	11.4%	2.8%	401
Composite/Other Paper	2.2%	0.7%	77
Plastic	**20.1%**		**705**
PET Bottles	0.6%	0.1%	22
HDPE Natural Bottles	0.2%	0.1%	8
HDPE Colored Bottles	0.2%	0.1%	5
Other Plastic Bottles	0.0%	0.0%	1
#2, 4, & 5 Tubs, Cups, and Lids	0.5%	0.2%	16
#1, 3, 6, & 7 Tubs, Cups, and Lids	1.0%	0.3%	35
Nonfood Expanded Polystyrene	0.4%	0.2%	14
Other Food Service Plastics	1.4%	0.7%	48
Other Rigid Packaging	1.0%	0.4%	34
Clean Shopping/Dry Cleaner Bags	0.2%	0.1%	6
Other Clean Polyethylene Film	0.2%	0.1%	7
Other Film	11.4%	3.3%	401
Plastic Products	1.9%	1.3%	67
Composite/Other Plastic	1.2%	1.0%	41
Glass	**1.9%**		**66**
Beverage Bottles	1.8%	0.9%	62
Container Glass	0.1%	0.1%	3
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.0%	0.0%	1
Metals	**3.0%**		**104**
Aluminum Cans	0.3%	0.1%	11
Aluminum Foil/Containers	0.2%	0.2%	8
Other Aluminum	0.0%	0.0%	0
Other Nonferrous	0.0%	0.1%	1
Tin/Steel Cans	0.5%	0.1%	17
Empty Paint & Aerosol Cans	0.0%	0.0%	1
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	0.8%	0.4%	28
Composite/Other Metals	1.1%	0.5%	38
Number of samples:	14		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**15.1%**		**530**
Grass	0.0%	0.0%	0
Prunings	1.5%	1.1%	51
Food	12.9%	5.2%	452
Disposable Diapers	0.4%	0.2%	13
Animal By-products	0.0%	0.0%	1
Composite/Other Organic	0.4%	0.3%	13
Other Materials	**2.6%**		**91**
Tires	0.0%	0.0%	0
Rubber	0.4%	0.2%	13
Textiles	2.0%	1.1%	72
Carpet/Upholstery	0.0%	0.0%	1
Apparel	0.2%	0.2%	6
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.0%	0.0%	0
Composite/Other Products	0.0%	0.0%	0
CDL Wastes	**14.2%**		**498**
Clean Wood	0.4%	0.2%	14
Pallets & Crates	0.0%	0.0%	0
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.5%	0.3%	17
Clean Gypsum	0.0%	0.0%	1
Painted Gypsum	1.3%	2.1%	45
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	0.3%	0.3%	10
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.2%	0.1%	5
Sand/Soil/Dirt/Grit/Fines	11.5%	8.6%	405
Composite/Other Construction Debris	0.0%	0.0%	1
Hazardous Wastes	**0.8%**		**29**
Hazardous Waste	0.8%	0.5%	29
Total	100.0%		**3,513**

Table A-9: Characterization of Other Commercially Collected Waste

Material	Est. Pct.	+ / -	Est. Tons
Paper	**28.1%**		**48,521**
Newspaper	4.0%	1.7%	6,941
Plain OCC/Kraft Paper	4.5%	1.1%	7,837
Waxed OCC/Kraft Paper	1.9%	1.8%	3,358
High-Grade Paper	2.1%	0.8%	3,601
Mixed Low-Grade Paper	7.6%	1.7%	13,037
Polycoated Paper	0.9%	0.3%	1,597
Compostable/Soiled Paper	5.6%	1.3%	9,670
Composite/Other Paper	1.4%	0.6%	2,482
Plastic	**11.5%**		**19,950**
PET Bottles	0.6%	0.2%	1,101
HDPE Natural Bottles	0.2%	0.1%	381
HDPE Colored Bottles	0.2%	0.0%	269
Other Plastic Bottles	0.0%	0.0%	36
#2, 4, & 5 Tubs, Cups, and Lids	0.3%	0.1%	469
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.7%	0.2%	1,200
Nonfood Expanded Polystyrene	0.3%	0.1%	440
Other Food Service Plastics	0.7%	0.2%	1,238
Other Rigid Packaging	1.1%	0.8%	1,867
Clean Shopping/Dry Cleaner Bags	0.1%	0.1%	214
Other Clean Polyethylene Film	0.8%	0.5%	1,453
Other Film	5.0%	1.2%	8,565
Plastic Products	1.1%	0.3%	1,917
Composite/Other Plastic	0.5%	0.1%	802
Glass	**5.7%**		**9,895**
Beverage Bottles	2.1%	0.7%	3,693
Container Glass	0.2%	0.1%	337
Plate Glass	2.7%	3.0%	4,700
Composite/Other Glass	0.7%	0.6%	1,165
Metals	**4.5%**		**7,783**
Aluminum Cans	0.2%	0.0%	261
Aluminum Foil/Containers	0.1%	0.1%	251
Other Aluminum	0.1%	0.1%	111
Other Nonferrous	0.1%	0.1%	143
Tin/Steel Cans	0.6%	0.2%	1,044
Empty Paint & Aerosol Cans	0.1%	0.0%	114
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	2.3%	1.4%	4,013
Composite/Other Metals	1.1%	0.4%	1,846
Number of samples:	76		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**29.2%**		**50,401**
Grass	0.2%	0.3%	393
Prunings	1.9%	1.1%	3,330
Food	24.2%	4.2%	41,748
Disposable Diapers	1.2%	0.5%	2,004
Animal By-products	0.5%	0.5%	781
Composite/Other Organic	1.2%	1.3%	2,144
Other Materials	**6.1%**		**10,463**
Tires	0.0%	0.0%	12
Rubber	0.5%	0.3%	842
Textiles	2.6%	1.1%	4,472
Carpet/Upholstery	1.6%	1.2%	2,841
Apparel	0.2%	0.2%	373
Furniture	0.9%	0.9%	1,480
Mattresses	0.1%	0.1%	115
Appliances	0.0%	0.1%	80
Composite/Other Products	0.1%	0.1%	249
CDL Wastes	**11.2%**		**19,397**
Clean Wood	1.8%	1.1%	3,149
Pallets & Crates	1.5%	1.0%	2,512
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.8%	0.7%	1,341
Clean Gypsum	0.3%	0.4%	495
Painted Gypsum	0.0%	0.0%	17
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	2.4%	2.1%	4,130
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.2%	0.1%	344
Sand/Soil/Dirt/Grit/Fines	3.8%	3.1%	6,557
Composite/Other Construction Debris	0.5%	0.3%	853
Hazardous Wastes	**3.5%**		**6,107**
Hazardous Waste	3.5%	2.1%	6,107
Total	**100.0%**		**172,517**

Table A-10: Characterization of Commercially Collected Multifamily Residential Waste

Material	Est. Pct.	+ / -	Est. Tons
Paper	22.4%		3,164
Newspaper	3.1%	1.0%	443
Plain OCC/Kraft Paper	2.7%	0.7%	377
Waxed OCC/Kraft Paper	0.3%	0.3%	41
High-Grade Paper	1.6%	0.6%	233
Mixed Low-Grade Paper	8.7%	3.0%	1,225
Polycoated Paper	0.6%	0.2%	84
Compostable/Soiled Paper	4.5%	2.0%	636
Composite/Other Paper	0.9%	0.3%	125
Plastic	10.4%		1,463
PET Bottles	0.6%	0.2%	90
HDPE Natural Bottles	0.4%	0.1%	60
HDPE Colored Bottles	0.3%	0.2%	38
Other Plastic Bottles	0.0%	0.0%	7
#2, 4, & 5 Tubs, Cups, and Lids	0.3%	0.1%	47
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.7%	0.3%	97
Nonfood Expanded Polystyrene	0.2%	0.2%	31
Other Food Service Plastics	0.7%	0.3%	104
Other Rigid Packaging	0.4%	0.2%	56
Clean Shopping/Dry Cleaner Bags	0.2%	0.2%	26
Other Clean Polyethylene Film	0.2%	0.2%	25
Other Film	3.6%	0.9%	508
Plastic Products	2.2%	2.2%	311
Composite/Other Plastic	0.4%	0.2%	63
Glass	3.7%		525
Beverage Bottles	2.5%	0.5%	350
Container Glass	0.8%	0.4%	116
Plate Glass	0.0%	0.0%	2
Composite/Other Glass	0.4%	0.4%	56
Metals	6.1%		864
Aluminum Cans	0.3%	0.1%	47
Aluminum Foil/Containers	0.2%	0.0%	24
Other Aluminum	0.1%	0.1%	17
Other Nonferrous	0.3%	0.4%	40
Tin/Steel Cans	1.0%	0.4%	142
Empty Paint & Aerosol Cans	0.0%	0.0%	3
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	0.6%	0.3%	84
Composite/Other Metals	3.6%	3.0%	507
Number of samples:	21		

Material	Est. Pct.	+ / -	Est. Tons
Organics	38.3%		5,413
Grass	0.1%	0.1%	13
Prunings	2.6%	2.0%	363
Food	29.4%	12.3%	4,152
Disposable Diapers	2.3%	0.8%	326
Animal By-products	3.4%	4.8%	482
Composite/Other Organic	0.5%	0.4%	77
Other Materials	8.3%		1,175
Tires	0.0%	0.0%	0
Rubber	0.1%	0.1%	17
Textiles	6.6%	4.1%	932
Carpet/Upholstery	0.2%	0.2%	26
Apparel	0.5%	0.3%	67
Furniture	0.9%	1.5%	134
Mattresses	0.0%	0.0%	0
Appliances	0.0%	0.0%	0
Composite/Other Products	0.0%	0.0%	0
CDL Wastes	5.5%		778
Clean Wood	1.4%	1.6%	197
Pallets & Crates	0.0%	0.0%	0
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	3.0%	2.3%	422
Clean Gypsum	0.0%	0.0%	0
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	0.0%	0.0%	0
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.2%	0.2%	30
Sand/Soil/Dirt/Grit/Fines	0.0%	0.0%	6
Composite/Other Construction Debris	0.9%	1.1%	123
Hazardous Wastes	5.3%		747
Hazardous Waste	5.3%	5.2%	747
Total	100.0%		14,129

Table A-11: Characterization of Commercially Collected CGI Waste

Material	Est. Pct.	+ / -	Est. Tons
Paper	**29.4%**		**42,422**
Newspaper	4.1%	2.0%	5,933
Plain OCC/Kraft Paper	4.4%	1.2%	6,401
Waxed OCC/Kraft Paper	2.3%	2.2%	3,317
High-Grade Paper	2.3%	0.9%	3,368
Mixed Low-Grade Paper	7.4%	1.9%	10,601
Polycoated Paper	1.0%	0.3%	1,487
Compostable/Soiled Paper	6.3%	1.5%	9,007
Composite/Other Paper	1.6%	0.7%	2,310
Plastic	**12.4%**		**17,892**
PET Bottles	0.7%	0.3%	1,007
HDPE Natural Bottles	0.2%	0.1%	318
HDPE Colored Bottles	0.2%	0.1%	230
Other Plastic Bottles	0.0%	0.0%	28
#2, 4, & 5 Tubs, Cups, and Lids	0.3%	0.1%	417
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.8%	0.2%	1,096
Nonfood Expanded Polystyrene	0.3%	0.1%	398
Other Food Service Plastics	0.8%	0.3%	1,131
Other Rigid Packaging	1.3%	0.9%	1,807
Clean Shopping/Dry Cleaner Bags	0.1%	0.1%	173
Other Clean Polyethylene Film	1.0%	0.7%	1,427
Other Film	5.6%	1.5%	8,025
Plastic Products	0.8%	0.3%	1,189
Composite/Other Plastic	0.4%	0.1%	646
Glass	**6.4%**		**9,208**
Beverage Bottles	2.2%	0.8%	3,198
Container Glass	0.1%	0.1%	203
Plate Glass	3.3%	3.6%	4,698
Composite/Other Glass	0.8%	0.7%	1,108
Metals	**3.1%**		**4,455**
Aluminum Cans	0.1%	0.0%	212
Aluminum Foil/Containers	0.2%	0.1%	224
Other Aluminum	0.0%	0.0%	9
Other Nonferrous	0.1%	0.1%	91
Tin/Steel Cans	0.6%	0.2%	889
Empty Paint & Aerosol Cans	0.1%	0.0%	111
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	1.3%	0.8%	1,824
Composite/Other Metals	0.8%	0.3%	1,094
Number of samples:	49		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**31.0%**		**44,671**
Grass	0.2%	0.3%	289
Prunings	2.1%	1.3%	2,959
Food	25.9%	4.8%	37,379
Disposable Diapers	1.2%	0.6%	1,678
Animal By-products	0.2%	0.3%	299
Composite/Other Organic	1.4%	1.6%	2,067
Other Materials	**5.4%**		**7,728**
Tires	0.0%	0.0%	12
Rubber	0.6%	0.3%	825
Textiles	2.4%	1.3%	3,424
Carpet/Upholstery	1.7%	1.4%	2,380
Apparel	0.2%	0.2%	299
Furniture	0.4%	0.7%	567
Mattresses	0.0%	0.0%	24
Appliances	0.0%	0.1%	44
Composite/Other Products	0.1%	0.1%	154
CDL Wastes	**10.0%**		**14,420**
Clean Wood	1.8%	1.3%	2,623
Pallets & Crates	1.2%	1.0%	1,750
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.6%	0.8%	919
Clean Gypsum	0.3%	0.5%	495
Painted Gypsum	0.0%	0.0%	17
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	2.8%	2.6%	3,967
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.2%	0.1%	314
Sand/Soil/Dirt/Grit/Fines	2.8%	3.2%	3,968
Composite/Other Construction Debris	0.3%	0.3%	367
Hazardous Wastes	**2.3%**		**3,254**
Hazardous Waste	2.3%	1.2%	3,254
Total	100.0%		**144,050**

Table A-12: Characterization of Commercially Collected Home Cleanout Waste

Material	Est. Pct.	+ / -	Est. Tons
Paper	**20.5%**		**2,934**
Newspaper	3.9%	2.8%	565
Plain OCC/Kraft Paper	7.4%	5.1%	1,058
Waxed OCC/Kraft Paper	0.0%	0.0%	0
High-Grade Paper	0.0%	0.0%	0
Mixed Low-Grade Paper	8.4%	5.9%	1,211
Polycoated Paper	0.2%	0.3%	26
Compostable/Soiled Paper	0.2%	0.3%	27
Composite/Other Paper	0.3%	0.5%	47
Plastic	**4.2%**		**595**
PET Bottles	0.0%	0.0%	4
HDPE Natural Bottles	0.0%	0.0%	3
HDPE Colored Bottles	0.0%	0.0%	1
Other Plastic Bottles	0.0%	0.0%	0
#2, 4, & 5 Tubs, Cups, and Lids	0.0%	0.0%	5
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.0%	0.0%	7
Nonfood Expanded Polystyrene	0.1%	0.1%	10
Other Food Service Plastics	0.0%	0.0%	4
Other Rigid Packaging	0.0%	0.0%	3
Clean Shopping/Dry Cleaner Bags	0.1%	0.1%	14
Other Clean Polyethylene Film	0.0%	0.0%	1
Other Film	0.2%	0.2%	32
Plastic Products	2.9%	1.9%	417
Composite/Other Plastic	0.7%	0.8%	94
Glass	**1.1%**		**163**
Beverage Bottles	1.0%	1.1%	145
Container Glass	0.1%	0.1%	18
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.0%	0.0%	0
Metals	**17.2%**		**2,465**
Aluminum Cans	0.0%	0.0%	2
Aluminum Foil/Containers	0.0%	0.0%	3
Other Aluminum	0.6%	1.0%	85
Other Nonferrous	0.1%	0.2%	13
Tin/Steel Cans	0.1%	0.1%	12
Empty Paint & Aerosol Cans	0.0%	0.0%	0
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	14.7%	15.2%	2,104
Composite/Other Metals	1.7%	2.7%	245
Number of samples:	6		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**2.2%**		**317**
Grass	0.6%	1.0%	91
Prunings	0.1%	0.1%	9
Food	1.5%	2.4%	217
Disposable Diapers	0.0%	0.0%	0
Animal By-products	0.0%	0.0%	0
Composite/Other Organic	0.0%	0.0%	0
Other Materials	**10.9%**		**1,559**
Tires	0.0%	0.0%	0
Rubber	0.0%	0.0%	0
Textiles	0.8%	1.1%	116
Carpet/Upholstery	3.0%	3.4%	435
Apparel	0.0%	0.1%	7
Furniture	5.4%	8.5%	779
Mattresses	0.6%	1.1%	91
Appliances	0.3%	0.4%	36
Composite/Other Products	0.7%	0.8%	95
CDL Wastes	**29.3%**		**4,199**
Clean Wood	2.3%	1.9%	329
Pallets & Crates	5.3%	5.5%	761
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.0%	0.0%	0
Clean Gypsum	0.0%	0.0%	0
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.0%	0
Rock/Concrete/Bricks	1.1%	2.0%	163
Asphaltic Roofing	0.0%	0.0%	0
Ceramics	0.0%	0.0%	0
Sand/Soil/Dirt/Grit/Fines	18.0%	17.2%	2,583
Composite/Other Construction Debris	2.5%	2.2%	362
Hazardous Wastes	**14.7%**		**2,106**
Hazardous Waste	14.7%	21.7%	2,106
Total	100.0%		14,338

Table A-13: Characterization of Self-Hauled Waste

Material	Est. Pct.	+ / -	Est. Tons
Paper	**13.4%**		**8,941**
Newspaper	3.0%	1.6%	2,021
Plain OCC/Kraft Paper	2.5%	1.5%	1,684
Waxed OCC/Kraft Paper	0.5%	0.7%	311
High-Grade Paper	0.4%	0.5%	297
Mixed Low-Grade Paper	4.5%	2.2%	3,011
Polycoated Paper	0.6%	0.4%	425
Compostable/Soiled Paper	1.2%	0.6%	788
Composite/Other Paper	0.6%	0.4%	403
Plastic	**2.8%**		**1,854**
PET Bottles	0.1%	0.0%	54
HDPE Natural Bottles	0.0%	0.0%	20
HDPE Colored Bottles	0.0%	0.0%	9
Other Plastic Bottles	0.0%	0.0%	2
#2, 4, & 5 Tubs, Cups, and Lids	0.1%	0.0%	35
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.1%	0.0%	46
Nonfood Expanded Polystyrene	0.0%	0.0%	33
Other Food Service Plastics	0.1%	0.1%	99
Other Rigid Packaging	0.2%	0.1%	141
Clean Shopping/Dry Cleaner Bags	0.1%	0.0%	36
Other Clean Polyethylene Film	0.1%	0.1%	52
Other Film	0.4%	0.2%	257
Plastic Products	0.7%	0.3%	437
Composite/Other Plastic	0.9%	1.1%	634
Glass	**0.5%**		**322**
Beverage Bottles	0.5%	0.4%	306
Container Glass	0.0%	0.0%	16
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.0%	0.0%	0
Metals	**5.4%**		**3,578**
Aluminum Cans	0.0%	0.0%	8
Aluminum Foil/Containers	0.0%	0.0%	14
Other Aluminum	0.0%	0.0%	0
Other Nonferrous	0.0%	0.0%	0
Tin/Steel Cans	0.0%	0.0%	33
Empty Paint & Aerosol Cans	0.0%	0.0%	3
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	3.6%	1.9%	2,388
Composite/Other Metals	1.7%	1.6%	1,132
Number of samples:	27		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**6.9%**		**4,589**
Grass	0.2%	0.3%	134
Prunings	2.6%	2.7%	1,770
Food	3.9%	2.2%	2,603
Disposable Diapers	0.0%	0.0%	0
Animal By-products	0.0%	0.1%	29
Composite/Other Organic	0.1%	0.1%	52
Other Materials	**31.5%**		**21,046**
Tires	0.3%	0.3%	187
Rubber	0.0%	0.0%	0
Textiles	5.7%	4.5%	3,843
Carpet/Upholstery	0.9%	0.5%	580
Apparel	0.1%	0.0%	37
Furniture	2.0%	1.7%	1,347
Mattresses	0.4%	0.2%	276
Appliances	1.0%	0.8%	666
Composite/Other Products	21.1%	0.4%	14,110
CDL Wastes	**34.9%**		**23,336**
Clean Wood	1.7%	1.6%	1,119
Pallets & Crates	0.5%	0.5%	314
Stumps & Logs	0.1%	0.1%	55
Composite/Other Wood	0.2%	0.3%	148
Clean Gypsum	0.0%	0.0%	0
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.0%	12
Rock/Concrete/Bricks	1.0%	1.8%	694
Asphaltic Roofing	26.4%	6.3%	17,689
Ceramics	0.0%	0.0%	0
Sand/Soil/Dirt/Grit/Fines	3.8%	1.8%	2,573
Composite/Other Construction Debris	1.1%	1.6%	731
Hazardous Wastes	**4.8%**		**3,214**
Hazardous Waste	4.8%	3.7%	3,214
Total	100.0%		**66,879**

Table A-14: Characterization of Self-Hauled Waste from Businesses

Material	Est. Pct.	+ / -	Est. Tons
Paper	2.4%		404
Newspaper	0.2%	0.2%	31
Plain OCC/Kraft Paper	0.5%	0.6%	85
Waxed OCC/Kraft Paper	0.9%	1.7%	149
High-Grade Paper	0.0%	0.0%	0
Mixed Low-Grade Paper	0.4%	0.5%	65
Polycoated Paper	0.1%	0.2%	19
Compostable/Soiled Paper	0.1%	0.2%	20
Composite/Other Paper	0.2%	0.4%	34
Plastic	2.5%		427
PET Bottles	0.0%	0.0%	0
HDPE Natural Bottles	0.0%	0.0%	0
HDPE Colored Bottles	0.0%	0.0%	0
Other Plastic Bottles	0.0%	0.0%	0
#2, 4, & 5 Tubs, Cups, and Lids	0.0%	0.0%	1
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.0%	0.0%	1
Nonfood Expanded Polystyrene	0.1%	0.1%	10
Other Food Service Plastics	0.0%	0.0%	0
Other Rigid Packaging	0.0%	0.0%	0
Clean Shopping/Dry Cleaner Bags	0.0%	0.1%	8
Other Clean Polyethylene Film	0.0%	0.0%	0
Other Film	0.1%	0.1%	18
Plastic Products	0.0%	0.0%	3
Composite/Other Plastic	2.3%	2.9%	386
Glass	0.0%		0
Beverage Bottles	0.0%	0.0%	0
Container Glass	0.0%	0.0%	0
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.0%	0.0%	0
Metals	2.4%		405
Aluminum Cans	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0
Other Aluminum	0.0%	0.0%	0
Other Nonferrous	0.0%	0.0%	0
Tin/Steel Cans	0.0%	0.0%	0
Empty Paint & Aerosol Cans	0.0%	0.0%	2
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	1.8%	2.5%	302
Composite/Other Metals	0.6%	0.8%	101
Number of samples:	9		

Material	Est. Pct.	+ / -	Est. Tons
Organics	1.4%		242
Grass	0.0%	0.1%	5
Prunings	1.0%	1.6%	173
Food	0.4%	0.7%	64
Disposable Diapers	0.0%	0.0%	0
Animal By-products	0.0%	0.0%	0
Composite/Other Organic	0.0%	0.0%	0
Other Materials	0.7%		123
Tires	0.0%	0.0%	0
Rubber	0.0%	0.0%	0
Textiles	0.1%	0.1%	11
Carpet/Upholstery	0.1%	0.3%	24
Apparel	0.0%	0.0%	1
Furniture	0.2%	0.2%	27
Mattresses	0.0%	0.0%	0
Appliances	0.0%	0.0%	0
Composite/Other Products	0.4%	0.7%	60
CDL Wastes	90.1%		15,170
Clean Wood	3.6%	4.2%	598
Pallets & Crates	0.2%	0.3%	37
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.0%	0.0%	0
Clean Gypsum	0.0%	0.0%	0
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.1%	8
Rock/Concrete/Bricks	2.8%	4.9%	480
Asphaltic Roofing	72.2%	17.3%	12,158
Ceramics	0.0%	0.0%	0
Sand/Soil/Dirt/Grit/Fines	8.3%	4.7%	1,399
Composite/Other Construction Debris	2.9%	4.4%	490
Hazardous Wastes	0.4%		62
Hazardous Waste	0.4%	0.5%	62
Total	100.0%		16,832

Table A-15: Characterization of Self-Hauled Waste from the Department of Public Works

Material	Est. Pct.	+ / -	Est. Tons
Paper	**17.0%**		**7,807**
Newspaper	4.0%	2.3%	1,854
Plain OCC/Kraft Paper	3.4%	2.2%	1,557
Waxed OCC/Kraft Paper	0.3%	0.4%	144
High-Grade Paper	0.6%	0.8%	283
Mixed Low-Grade Paper	5.8%	3.2%	2,653
Polycoated Paper	0.8%	0.6%	376
Compostable/Soiled Paper	1.4%	0.8%	628
Composite/Other Paper	0.7%	0.5%	313
Plastic	**2.7%**		**1,255**
PET Bottles	0.1%	0.1%	44
HDPE Natural Bottles	0.0%	0.0%	12
HDPE Colored Bottles	0.0%	0.0%	7
Other Plastic Bottles	0.0%	0.0%	1
#2, 4, & 5 Tubs, Cups, and Lids	0.0%	0.0%	22
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.1%	0.0%	28
Nonfood Expanded Polystyrene	0.0%	0.0%	21
Other Food Service Plastics	0.2%	0.1%	89
Other Rigid Packaging	0.3%	0.2%	132
Clean Shopping/Dry Cleaner Bags	0.0%	0.0%	18
Other Clean Polyethylene Film	0.1%	0.1%	51
Other Film	0.5%	0.3%	214
Plastic Products	0.9%	0.4%	429
Composite/Other Plastic	0.4%	0.4%	186
Glass	**0.5%**		**246**
Beverage Bottles	0.5%	0.6%	239
Container Glass	0.0%	0.0%	8
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.0%	0.0%	0
Metals	**6.7%**		**3,075**
Aluminum Cans	0.0%	0.0%	7
Aluminum Foil/Containers	0.0%	0.0%	12
Other Aluminum	0.0%	0.0%	0
Other Nonferrous	0.0%	0.0%	0
Tin/Steel Cans	0.1%	0.0%	25
Empty Paint & Aerosol Cans	0.0%	0.0%	1
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	4.5%	2.4%	2,050
Composite/Other Metals	2.1%	2.3%	980

Number of samples: 14

Material	Est. Pct.	+ / -	Est. Tons
Organics	**7.9%**		**3,636**
Grass	0.3%	0.4%	121
Prunings	3.4%	3.9%	1,568
Food	4.2%	3.0%	1,947
Disposable Diapers	0.0%	0.0%	0
Animal By-products	0.0%	0.0%	0
Composite/Other Organic	0.0%	0.0%	0
Other Materials	**44.9%**		**20,655**
Tires	0.4%	0.4%	187
Rubber	0.0%	0.0%	0
Textiles	8.2%	6.5%	3,785
Carpet/Upholstery	0.9%	0.7%	429
Apparel	0.1%	0.1%	33
Furniture	2.7%	2.4%	1,245
Mattresses	0.6%	0.3%	276
Appliances	1.4%	1.2%	666
Composite/Other Products	30.5%	0.4%	14,035
CDL Wastes	**13.5%**		**6,238**
Clean Wood	1.0%	0.6%	439
Pallets & Crates	0.6%	0.8%	258
Stumps & Logs	0.1%	0.2%	55
Composite/Other Wood	0.3%	0.5%	148
Clean Gypsum	0.0%	0.0%	0
Painted Gypsum	0.0%	0.0%	0
Fiberglass Insulation	0.0%	0.0%	3
Rock/Concrete/Bricks	0.3%	0.6%	157
Asphaltic Roofing	8.7%	2.1%	3,988
Ceramics	0.0%	0.0%	0
Sand/Soil/Dirt/Grit/Fines	2.2%	0.8%	1,008
Composite/Other Construction Debris	0.4%	0.5%	183
Hazardous Wastes	**6.8%**		**3,133**
Hazardous Waste	6.8%	5.3%	3,133
Total	100.0%		**46,047**

Table A-16: Characterization of Waste from the iMRF

Material	Est. Pct.	+ / -	Est. Tons
Paper	**19.5%**		**3,415**
Newspaper	0.0%	0.0%	2
Plain OCC/Kraft Paper	1.7%	1.0%	291
Waxed OCC/Kraft Paper	0.0%	0.0%	0
High-Grade Paper	0.7%	0.8%	124
Mixed Low-Grade Paper	17.0%	8.1%	2,961
Polycoated Paper	0.0%	0.0%	0
Compostable/Soiled Paper	0.0%	0.0%	0
Composite/Other Paper	0.2%	0.3%	36
Plastic	**3.9%**		**678**
PET Bottles	0.0%	0.0%	0
HDPE Natural Bottles	0.0%	0.0%	0
HDPE Colored Bottles	0.0%	0.0%	0
Other Plastic Bottles	0.0%	0.0%	0
#2, 4, & 5 Tubs, Cups, and Lids	0.0%	0.0%	0
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.0%	0.0%	0
Nonfood Expanded Polystyrene	0.7%	0.8%	120
Other Food Service Plastics	0.0%	0.0%	0
Other Rigid Packaging	0.0%	0.0%	0
Clean Shopping/Dry Cleaner Bags	0.0%	0.0%	0
Other Clean Polyethylene Film	0.0%	0.0%	0
Other Film	3.0%	1.6%	521
Plastic Products	0.2%	0.1%	29
Composite/Other Plastic	0.0%	0.0%	8
Glass	**0.5%**		**96**
Beverage Bottles	0.0%	0.0%	0
Container Glass	0.5%	0.9%	96
Plate Glass	0.0%	0.0%	0
Composite/Other Glass	0.0%	0.0%	0
Metals	**2.4%**		**420**
Aluminum Cans	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0
Other Aluminum	0.0%	0.0%	0
Other Nonferrous	0.0%	0.0%	0
Tin/Steel Cans	0.0%	0.0%	0
Empty Paint & Aerosol Cans	0.0%	0.0%	5
Empty Propane and Other Tanks	0.0%	0.0%	0
Other Ferrous	0.0%	0.0%	3
Composite/Other Metals	2.4%	2.0%	413
Number of samples:	55		

Material	Est. Pct.	+ / -	Est. Tons
Organics	**0.7%**		**125**
Grass	0.0%	0.0%	0
Prunings	0.7%	0.7%	125
Food	0.0%	0.0%	0
Disposable Diapers	0.0%	0.0%	0
Animal By-products	0.0%	0.0%	0
Composite/Other Organic	0.0%	0.0%	0
Other Materials	**9.1%**		**1,595**
Tires	0.0%	0.0%	0
Rubber	0.0%	0.0%	0
Textiles	0.4%	0.2%	62
Carpet/Upholstery	8.2%	5.5%	1,434
Apparel	0.0%	0.0%	0
Furniture	0.0%	0.0%	0
Mattresses	0.0%	0.0%	0
Appliances	0.0%	0.0%	0
Composite/Other Products	0.6%	0.8%	99
CDL Wastes	**58.7%**		**10,253**
Clean Wood	14.0%	7.6%	2,440
Pallets & Crates	0.0%	0.0%	0
Stumps & Logs	0.0%	0.0%	0
Composite/Other Wood	0.0%	0.0%	0
Clean Gypsum	0.3%	0.4%	53
Painted Gypsum	6.0%	4.8%	1,055
Fiberglass Insulation	0.2%	0.2%	34
Rock/Concrete/Bricks	30.1%	14.8%	5,261
Asphaltic Roofing	4.8%	3.2%	831
Ceramics	0.2%	0.4%	38
Sand/Soil/Dirt/Grit/Fines	0.0%	0.0%	0
Composite/Other Construction Debris	3.1%	2.2%	541
Hazardous Wastes	**5.1%**		**886**
Hazardous Waste	5.1%	5.3%	886
Total	100.0%		17,468

Table A-17: Characterization of Waste Disposed at the Hillside Landfill

Material	Est. Pct.	+ / -	Est. Tons
Paper	**5.9%**		**1,910**
Newspaper	0.8%	0.3%	252
Plain OCC/Kraft Paper	0.1%	0.0%	44
Waxed OCC/Kraft Paper	0.0%	0.0%	1
High-Grade Paper	0.2%	0.2%	73
Mixed Low-Grade Paper	1.1%	0.4%	348
Polycoated Paper	2.1%	1.6%	664
Compostable/Soiled Paper	0.1%	0.1%	18
Composite/Other Paper	1.6%	1.2%	511
Plastic	**1.2%**		**387**
PET Bottles	0.0%	0.0%	2
HDPE Natural Bottles	0.0%	0.0%	1
HDPE Colored Bottles	0.0%	0.0%	0
Other Plastic Bottles	0.0%	0.0%	0
#2, 4, & 5 Tubs, Cups, and Lids	0.0%	0.0%	1
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.0%	0.0%	1
Nonfood Expanded Polystyrene	0.0%	0.0%	14
Other Food Service Plastics	0.0%	0.0%	5
Other Rigid Packaging	0.0%	0.0%	7
Clean Shopping/Dry Cleaner Bags	0.0%	0.0%	3
Other Clean Polyethylene Film	0.1%	0.0%	17
Other Film	0.2%	0.1%	64
Plastic Products	0.6%	0.2%	198
Composite/Other Plastic	0.2%	0.1%	75
Glass	**2.9%**		**933**
Beverage Bottles	0.0%	0.0%	12
Container Glass	0.0%	0.0%	0
Plate Glass	1.3%	0.8%	422
Composite/Other Glass	1.6%	0.8%	499
Metals	**3.3%**		**1,050**
Aluminum Cans	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0
Other Aluminum	0.0%	0.0%	10
Other Nonferrous	0.2%	0.1%	61
Tin/Steel Cans	0.0%	0.0%	1
Empty Paint & Aerosol Cans	0.1%	0.0%	19
Empty Propane and Other Tanks	0.0%	0.0%	7
Other Ferrous	0.7%	0.2%	230
Composite/Other Metals	2.2%	0.8%	722

Number of samples: 321

Material	Est. Pct.	+ / -	Est. Tons
Organics	**2.2%**		**703**
Grass	0.1%	0.1%	42
Prunings	1.2%	0.5%	385
Food	0.3%	0.3%	87
Disposable Diapers	0.0%	0.0%	0
Animal By-products	0.0%	0.0%	0
Composite/Other Organic	0.6%	0.9%	189
Other Materials	**9.1%**		**2,916**
Tires	0.0%	0.0%	14
Rubber	0.0%	0.0%	0
Textiles	1.3%	0.6%	415
Carpet/Upholstery	0.3%	0.1%	85
Apparel	0.0%	0.0%	3
Furniture	3.3%	1.3%	1,069
Mattresses	0.0%	0.0%	14
Appliances	3.4%	1.6%	1,088
Composite/Other Products	0.7%	0.3%	228
CDL Wastes	**69.7%**		**22,401**
Clean Wood	0.7%	0.2%	226
Pallets & Crates	0.0%	0.0%	6
Stumps & Logs	0.0%	0.0%	2
Composite/Other Wood	0.0%	0.0%	13
Clean Gypsum	3.6%	2.0%	1,163
Painted Gypsum	6.6%	2.2%	2,124
Fiberglass Insulation	0.0%	0.0%	14
Rock/Concrete/Bricks	25.0%	6.0%	8,042
Asphaltic Roofing	3.6%	2.7%	1,148
Ceramics	7.5%	2.4%	2,415
Sand/Soil/Dirt/Grit/Fines	20.0%	4.3%	6,431
Composite/Other Construction Debris	2.5%	1.0%	816
Hazardous Wastes	**5.7%**		**1,844**
Hazardous Waste	5.7%	1.0%	1,844
Total	100.0%		32,145

Table A-18: Characterization of San Francisco Waste Disposed through Norcal, Winter Season

Material	Est. Pct.	+ / -
Paper	**23.2%**	
Newspaper	4.1%	1.1%
Plain OCC/Kraft Paper	3.3%	0.7%
Waxed OCC/Kraft Paper	1.4%	1.2%
High-Grade Paper	1.5%	0.3%
Mixed Low-Grade Paper	6.7%	1.1%
Polycoated Paper	0.8%	0.2%
Compostable/Soiled Paper	4.5%	1.0%
Composite/Other Paper	0.9%	0.2%
Plastic	**10.0%**	
PET Bottles	0.5%	0.1%
HDPE Natural Bottles	0.2%	0.0%
HDPE Colored Bottles	0.1%	0.0%
Other Plastic Bottles	0.0%	0.0%
#2, 4, & 5 Tubs, Cups, and Lids	0.3%	0.1%
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.2%	0.1%
Nonfood Expanded Polystyrene	0.3%	0.1%
Other Food Service Plastics	1.1%	0.2%
Other Rigid Packaging	0.9%	0.9%
Clean Shopping/Dry Cleaner Bags	0.2%	0.1%
Other Clean Polyethylene Film	0.7%	0.3%
Other Film	3.7%	0.5%
Plastic Products	1.2%	0.3%
Composite/Other Plastic	0.7%	0.2%
Glass	**3.2%**	
Beverage Bottles	1.7%	0.3%
Container Glass	0.2%	0.1%
Plate Glass	1.0%	1.0%
Composite/Other Glass	0.3%	0.2%
Metals	**3.4%**	
Aluminum Cans	0.1%	0.0%
Aluminum Foil/Containers	0.2%	0.1%
Other Aluminum	0.0%	0.0%
Other Nonferrous	0.1%	0.1%
Tin/Steel Cans	0.5%	0.1%
Empty Paint & Aerosol Cans	0.0%	0.0%
Empty Propane and Other Tanks	0.0%	0.0%
Other Ferrous	1.4%	0.5%
Composite/Other Metals	1.0%	0.3%
Number of samples:	200	

Material	Est. Pct.	+ / -
Organics	**32.6%**	
Grass	0.1%	0.1%
Prunings	1.9%	0.8%
Food	26.9%	2.8%
Disposable Diapers	2.0%	0.7%
Animal By-products	1.2%	0.4%
Composite/Other Organic	0.5%	0.2%
Other Materials	**9.9%**	
Tires	0.0%	0.0%
Rubber	0.2%	0.1%
Textiles	3.3%	0.9%
Carpet/Upholstery	2.1%	0.7%
Apparel	0.5%	0.2%
Furniture	0.6%	0.4%
Mattresses	0.1%	0.0%
Appliances	0.3%	0.2%
Composite/Other Products	2.8%	0.1%
CDL Wastes	**14.3%**	
Clean Wood	2.1%	1.1%
Pallets & Crates	0.6%	0.4%
Stumps & Logs	0.0%	0.0%
Composite/Other Wood	0.7%	0.5%
Clean Gypsum	0.3%	0.3%
Painted Gypsum	0.2%	0.2%
Fiberglass Insulation	0.0%	0.0%
Rock/Concrete/Bricks	3.2%	2.2%
Asphaltic Roofing	3.6%	0.8%
Ceramics	0.5%	0.3%
Sand/Soil/Dirt/Grit/Fines	2.4%	1.3%
Composite/Other Construction Debris	0.7%	0.4%
Hazardous Wastes	**3.4%**	
Hazardous Waste	3.4%	1.1%
Total	100.0%	

Table A-19: Characterization of San Francisco Waste Disposed through Norcal, Spring Season

Material	Est. Pct.	+ / -
Paper	**24.9%**	
Newspaper	3.4%	0.5%
Plain OCC/Kraft Paper	3.1%	0.5%
Waxed OCC/Kraft Paper	0.4%	0.2%
High-Grade Paper	1.7%	0.4%
Mixed Low-Grade Paper	7.8%	0.8%
Polycoated Paper	0.8%	0.1%
Compostable/Soiled Paper	6.4%	0.7%
Composite/Other Paper	1.4%	0.4%
Plastic	**11.0%**	
PET Bottles	0.6%	0.1%
HDPE Natural Bottles	0.2%	0.0%
HDPE Colored Bottles	0.2%	0.0%
Other Plastic Bottles	0.0%	0.0%
#2, 4, & 5 Tubs, Cups, and Lids	0.4%	0.1%
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.9%	0.1%
Nonfood Expanded Polystyrene	0.2%	0.1%
Other Food Service Plastics	0.4%	0.1%
Other Rigid Packaging	0.7%	0.1%
Clean Shopping/Dry Cleaner Bags	0.2%	0.1%
Other Clean Polyethylene Film	0.3%	0.3%
Other Film	5.1%	0.6%
Plastic Products	0.9%	0.2%
Composite/Other Plastic	0.8%	0.2%
Glass	**3.5%**	
Beverage Bottles	1.9%	0.5%
Container Glass	0.3%	0.1%
Plate Glass	0.9%	1.0%
Composite/Other Glass	0.4%	0.2%
Metals	**5.2%**	
Aluminum Cans	0.2%	0.0%
Aluminum Foil/Containers	0.2%	0.0%
Other Aluminum	0.1%	0.1%
Other Nonferrous	0.1%	0.1%
Tin/Steel Cans	0.7%	0.2%
Empty Paint & Aerosol Cans	0.1%	0.0%
Empty Propane and Other Tanks	0.0%	0.0%
Other Ferrous	2.6%	1.2%
Composite/Other Metals	1.3%	0.4%
Organics	**33.2%**	
Grass	0.2%	0.2%
Prunings	1.6%	0.6%
Food	26.7%	2.5%
Disposable Diapers	2.3%	0.5%
Animal By-products	1.6%	0.8%
Composite/Other Organic	0.8%	0.6%
Other Materials	**9.1%**	
Tires	0.0%	0.0%
Rubber	0.3%	0.1%
Textiles	3.6%	0.8%
Carpet/Upholstery	1.1%	0.5%
Apparel	0.3%	0.1%
Furniture	0.6%	0.4%
Mattresses	0.1%	0.0%
Appliances	0.2%	0.1%
Composite/Other Products	2.8%	0.1%
CDL Wastes	**10.6%**	
Clean Wood	1.4%	0.5%
Pallets & Crates	0.5%	0.3%
Stumps & Logs	0.0%	0.0%
Composite/Other Wood	0.5%	0.3%
Clean Gypsum	0.2%	0.2%
Painted Gypsum	0.2%	0.2%
Fiberglass Insulation	0.0%	0.0%
Rock/Concrete/Bricks	1.7%	0.8%
Asphaltic Roofing	3.6%	0.8%
Ceramics	0.2%	0.1%
Sand/Soil/Dirt/Grit/Fines	1.8%	1.0%
Composite/Other Construction Debris	0.4%	0.2%
Hazardous Wastes	**2.5%**	
Hazardous Waste	2.5%	0.9%
Number of samples:	189	
Total	100.0%	

APPENDIX B
Material List and Definitions

Paper

1. **Newspaper:** Printed ground-wood newsprint. Advertising "slicks" (glossy paper), if found mixed with newspaper; otherwise, ad slicks are included with mixed low-grade paper.

2. **Plain OCC/Kraft Paper:** Unwaxed/uncoated corrugated container boxes and Kraft paper, including large brown or white paper checkout bags printed with the name of a supermarket.

3. **Waxed OCC/Kraft Paper:** Waxed/coated corrugated container boxes and Kraft paper, and brown paper bags.

4. **High-Grade Paper:** White and lightly colored bond, rag, or stationery-grade paper. This includes white or lightly colored sulfite/sulfate bond, copy papers, notebook paper, envelopes, continuous-feed sulfite/sulfate computer printouts, and forms of all types, excluding carbonless paper.

5. **Mixed Low-Grade Paper:** Mixed paper acceptable in San Francisco's residential curbside program. This includes junk mail, magazines, colored papers, bleached Kraft, boxboard, mailing tubes, carbonless copy paper, ground-wood computer printouts, paperback books, and telephone directories. Includes large Kraft carryout bags and white shopping bags without a supermarket name, department stores, hardware stores, etc. with or without handles, paper fast-food packaging bags, paper lunch-size bags, etc.

6. **Polycoated Paper:** Bleached and unbleached paperboard coated with HDPE film. This includes polycoated milk, juice (including those with plastic spouts), and ice cream cartons, paper cups, takeout containers, and frozen/refrigerator packaging. Excludes juice concentrate cans.

7. **Compostable/Soiled Paper:** Paper towels, paper plates, waxed paper, tissues, and other papers that were soiled with food during use (e.g., pizza box inserts).

8. **Composite/Other Paper:** Predominantly paper with other materials attached (e.g., orange juice cans and spiral notebooks), and other difficult to recycle paper products such as carbon copy paper, hardcover books, photographs, and aseptic drink boxes.

Plastic

9. **PET Bottles:** Polyethylene terephthalate (No. 1) translucent bottles.

10. **HDPE Natural Bottles:** High-density translucent polyethylene (No. 2) milk, juice, beverage, oil, vinegar, and distilled water bottles with necks.

11. **HDPE Colored Bottles:** High-density colored polyethylene (No. 2) bottles. Liquid detergent bottles and some hair care bottles with necks.

12. **Other Plastic Bottles:** Plastic bottles not classified in the above-defined PET or HDPE categories; includes No. 3 through No. 7, unknown bottles, and other bottles with necks.

13. **No. 2, 4, and 5 Tubs, Cups, and Lids:** No. 2, 4, and 5 wide mouth cups and tubs, without a neck, and lids, such as for yogurt, cottage cheese, and margarine containers.

14. **No. 1, 3, 6, and 7 Tubs, Cups, and Lids:** No. 1, 3, 6, and 7 wide-mouth cups and tubs, without a neck, and lids, such as polystyrene (expanded and clear) drink cups, and food, cosmetic, cleaning, auto, and other products and packaging.

15. **Nonfood Expanded Polystyrene:** Nonfood packaging and finished products made of expanded polystyrene. Includes Styrofoam products such as packaging peanuts and blocks.

16. **Other Food Service Plastics:** Includes plastic food-related packaging and finished products not classified elsewhere that are made of polystyrene and other plastics. Includes items such as plates, bowls, clamshells, salad trays, microwave trays, cookie tray inserts, utensils, straws, stirrers, and condiment packaging.

17. **Other Rigid Packaging:** No. 1 through No. 7 and unmarked rigid plastic packaging and containers (excluding expanded polystyrene and food service plastics). Includes plastic toothpaste tubes and spools.

18. **Clean Shopping/Dry Cleaner Bags:** Includes grocery and other checkout bags without a supermarket or other type of store name printed on them. This category includes bags intended to contain produce, bread, merchandise, dry-cleaned clothing, and newspapers, but it does not include bags that were not contaminated with food, liquid, or grit during use.

19. **Other Clean Polyethylene Film:** Polyethylene film, plastic sheeting, and bags, other than those identified above, which were not contaminated with food, liquid, or grit during use.

20. **Other Film:** Film packaging other than checkout bags, and not defined above, or: was contaminated with food, liquid, or grit during use; is woven together (e.g., grain bags); contains multiple layers of film or other materials that have been fused together (e.g., potato chip bags). This category also includes photographic negatives, shower curtains, and used garbage bags. This category also includes supermarket and shopping bags that were contaminated with food, liquid, or grit during use.

21. **Plastic Products:** Other finished plastic products made entirely of plastic such as toys, toothbrushes, vinyl hose, and lawn furniture. Includes fiberglass resin products and materials.

22. **Composite/Other Plastic:** Items that are predominantly plastic with other materials attached such as disposable razors, pens, lighters, toys, and binders.

Glass

23. **Beverage Bottles:** Bottles of all colors including: soda, liquor, wine, juice, beer, mineral water, and sports drinks.

24. **Container Glass:** Glass jars and other containers of all colors holding solid and/or liquid materials such as condiments, jam, pickles, nondairy creamer, vinegar, extracts, and facial cream.

25. **Plate Glass:** Clear or tinted window, door, shelf, tabletop, flat auto, bus shelter, and other flat glass, including tempered.

26. **Composite/Other Glass:** Mirrors, glassware, crystal, Pyrex and CorningWare, and laminated or curved glass such as windshields.

Metal

27. **Aluminum Cans:** Aluminum beverage cans (UBC) and bi-metal cans made mostly of aluminum.

28. **Aluminum Foil/Containers:** Aluminum food containers, trays, pie tins, and foil.

29. **Other Aluminum:** Aluminum products and scraps such as window frames and cookware.

30. **Other Nonferrous:** Metals not derived from iron, to which a magnet will not adhere, and which are not significantly contaminated with other metals or materials.

31. **Tin/Steel Cans:** Tinned steel food, pet food, and other containers, including bi-metal cans mostly of steel.

32. **Empty Paint and Aerosol Cans:** Empty, metal paint and aerosol cans, including metal lids.

33. **Empty Propane and Other Tanks:** Metal tanks used for storage and distribution of propane and other compressed fuels.

34. **Other Ferrous:** Ferrous and alloyed ferrous scrap metals, to which a magnet adheres, and which are not significantly contaminated with other metals or materials.

35. **Composite/Other Metals:** Items that are predominantly metal such as motors, insulated wire, appliances, and other products or parts containing a mixture of metals, or metals and other materials.

Organic

36. **Grass:** Grass clippings only, not including sod or weeded plants.

37. **Prunings:** Leaves, weeds, brush, and cut prunings, 4 feet or less in length, from bushes, shrubs, and trees.

38. **Food:** Food wastes and scraps, including meat, bone, dairy, grains, rinds, tea bags, coffee grounds with filters, etc. Excludes the weight of food containers, except when container weight is not appreciable compared to the food inside. Compostable peanuts, food packaging with food scraps, and small wooden produce crates are also included in this category.

39. **Disposable Diapers:** Diapers made from a combination of fibers, synthetic and/or natural, and made for the purpose of single use. This includes disposable baby diapers and adult protective undergarments.

40. **Animal By-products:** Animal carcasses not resulting from food storage or preparation, animal wastes, and kitty litter.

41. **Composite/Other Organic:** Combustible materials including wax, bar soap, cigarette butts, feminine hygiene products, vacuum cleaner bag contents, leather, briquettes, and fireplace, burn barrel, and fire-pit ash, and other organic materials not classified elsewhere.

Other Products

42. **Tires:** Vehicle tires of all types. Inner tubes are put into the rubber category.

43. **Rubber:** Finished products and scrap materials made of natural and synthetic rubber, such as bath mats, inner tubes, rubber hoses, and foam rubber.

44. **Textiles:** Rag stock fabric materials and clothing including natural and synthetic textiles such as cotton, wool, silk, woven nylon, rayon, and polyester.

45. **Carpet/Upholstery:** General category of flooring applications and non-rag stock textiles consisting of various natural or synthetic fibers bonded to some type of backing material. Also includes non-rag stock grade textiles such as heavy linens and draperies.

46. **Apparel:** Shoes, tennis shoes, purses, and other composite accessories.

47. **Furniture:** Mixed-material furniture such as upholstered chairs. Furniture that is made purely of one material, such as plastic or metal, would be categorized according to that material (e.g., plastic products or other ferrous metal).

48. **Mattresses:** Mattresses and box springs.

49. **Appliances:** Nonhazardous, not predominantly metal electric appliances such as toasters, microwave ovens, power tools, curling irons, and light fixtures.

50. **Composite/Other Products:** Other multi-material assembled or composite household and other products.

Construction Debris

51. **Clean Wood:** Including milled lumber commonly used in construction for framing and related uses, including 2 x 4's and 2 x 6's, and sheets of plywood, strandboard, and particleboard.

52. **Pallets and Crates:** Clean wood pallets (whole and broken), crates, pieces of crates, and other packaging lumber and panel board. Small compostable wooden produce crates are put in the food category.

53. **Stumps and Logs:** Stumps or logs 4 feet or greater in length.

54. **Composite/Other Wood:** Predominantly wood and lumber products that are mixed with other materials in such a way that they cannot easily be separated. This includes wood with metal, gypsum, concrete, or other contaminants. Painted or chemically treated wood goes in the hazardous waste "treated wood" category.

55. **Clean Gypsum:** Calcium sulfate dehydrate sandwiched between heavy layers of Kraft-type paper. Also known as drywall. This category includes drywall that has not been painted or treated in other ways.

56. **Painted Gypsum:** Used or demolition gypsum wallboard that has been painted or treated.

57. **Fiberglass Insulation:** Fiberglass building and mechanical insulation, batt or rigid.

58. **Rock/Concrete/Bricks:** Rock gravel larger than 2" in diameter, Portland cement mixtures (set or unset), and fired-clay bricks.

59. **Asphaltic Roofing:** Asphalt shingles and tarpaper of built-up roofing.

60. **Ceramics:** Finished ceramic or porcelain products such as toilets, sinks, cups, and dishware.

61. **Sand/Soil/Dirt/Grit/Fines:** Contains mixed fines smaller than 2" in diameter, including floor sweepings from construction sites and other inorganic waste.

62. **Composite/Other Construction Debris:** Construction debris (other than predominantly wood) that cannot be classified elsewhere.

Hazardous Waste

63. **Hazardous Waste:** Latex paints, solvent-based adhesives/glues, water-based adhesives/glues, oil-based paint/solvent, caustic cleaners, pesticides/herbicides, dry-cell batteries, wet-cell batteries, gasoline/kerosene, motor oil/diesel oil, oil filters, asbestos, treated wood, explosives, medical wastes, other cleaners/chemicals, light bulbs, televisions, computer monitors, other computer equipment, other electronics, certain cosmetics, and other potentially harmful wastes. This category also includes plastic, paper, and glass containers that were used for the sale or distribution of products categorized as hazardous materials and that contained any noticeable amount of the hazardous product.

APPENDIX C
Waste Sampling Methodology

Overview

This appendix describes the methods used to characterize the municipal solid waste (MSW) that originates from within San Francisco and that is disposed through Norcal or disposed at the Hillside Landfill. The study employed the hand-sorting and visual characterization of waste samples to derive statistically valid estimates of the composition of MSW corresponding to specific waste sectors.

Allocation of Waste Samples

The study team identified the most important sources of waste (referred to as *sectors*) that together constitute the MSW originating within San Francisco. Sectors were further classified into *subsectors*, when appropriate.

It was determined that certain waste sectors would be best characterized using hand-sorting techniques. These waste sectors included residential waste, some commercial waste, and residue from the Pier 96 material recovery facility. Typically, waste from these sectors includes very diverse types of material in relatively small pieces, and it is therefore not well suited to visual characterization. Other waste sectors, including some waste in open rolloff containers, self-hauled waste, waste from certain City departments, and waste from the iMRF were assigned to be characterized through visual techniques.

An additional component of the project involved characterizing waste from selected representatives of certain business groups and institutions. Containers of waste from these generator groups were characterized visually.

The diagram on the following page presents the sectors and subsectors that together generate San Francisco's disposed MSW. The diagram indicates which parts of the waste stream were addressed in this study, and how each sector or subsector was characterized. In addition, the diagram presents an estimate of the annual tons of waste associated with each sector or subsector, based on 2004 data.

Waste Sector or Subsector	Characterization Method	Number of Samples	Estimated Annual Tons
Waste disposed through Norcal			
Waste characterized in this study			
Sectors that were combined for the study's "overall Norcal" waste characterization			
Fantastic 3 Program			
Single-family (SF)	Hand-sort	40	129,630
Multifamily (MF)	Hand-sort	21	48,082
Commercial, governmental, institutional (CGI)	Hand-sort	54	59,609
Pier 96			
Residuals from Fantastic 3 programs	Hand-sort	4	15,934
Residuals from other waste sources	Hand-sort	14	3,513
Commercially Collected Waste			
Multifamily (MF) waste			
MF waste collected in packer trucks	Hand-sort	17	7,599
MF waste in compactors	Hand-sort	4	6,530
Commercial, governmental, institutional (CGI)			
CGI waste collected in packer trucks	Hand-sort	24	69,765
CGI waste in compactors	Hand-sort	19	59,947
CGI waste in open rolloff containers	Visual	6	14,338
Home cleanout waste in open rolloff containers	Visual	6	14,338
Self-Hauled Waste			
Waste self-hauled by businesses with Norcal acccounts	Visual	9	16,832
Waste in packers from Recreation & Park Department	Visual	4	2,000
Waste from Department of Public Works (DPW)			
Litter patrol and broom support	Visual	10	5,526
DPW packer trucks	Visual	4	3,684
City litter cans	Modeled [1]		17,500
Street sweepings	Modeled [2]		12,893
Wastewater treatment plant screenings	Modeled [2]		921
Other DPW materials	Modeled [3]		5,523
Other City self-hauled waste	Modeled [3]		2,000
Bulky item collection	Modeled [4]		2,032
Residuals from the iMRF facility	Visual	55	17,468
Business, institutional, and government groups that were analyzed separately			
Large hotels	Visual	19	
Small hotels	Visual	24	
Restaurants	Visual	25	
Large retail stores and malls	Visual	24	
Large office buildings with ground-floor retail	Visual	14	
Large office buildings with no retail	Visual	21	
Housing Authority	Visual	5	
City Operations			
Muni Yards	Visual	3	
Water Department Corps yard	Visual	1	
Wastewater treatment plant refuse	Visual	2	
Fire Department	Visual	1	
Institutions			
San Francisco General Hospital	Visual	2	
Laguna Honda Hospital	Visual	2	
San Francisco Jails	Visual	2	
Youth Guidance Center	Visual	2	
Waste not characterized in this study			
Public self-hauled waste that goes to the iMRF			
Rolloff construction and demolition waste that goes to the iMRF			
Organics operations rejects			2,885
Pier 96 mixed paper line residuals			2,620
Direct haul operations rejects			342
Transfer station adjustments			-1,649
Waste not disposed through Norcal			
Waste characterized in this study			
Hillside Landfill	Visual	321	32,145
Waste not characterized in this study			
Ox Mountain Landfill			75,490
Other Landfills (estimated)			41,850

Notes:

[1] Waste from city streetside litter cans, which was not sampled, was assumed to have the same composition as waste disposed by litter patrol and broom support operations, which was sampled. This assumption was used to produce composition profiles for wastes disposed by the DPW and for wastes disposed through Norcal.

[2] Street sweepings and wastewater treatment plant screenings were not characterized, but were classified wholly as the material "composite/other products" for the purpose of calculating composition profiles for wastes disposed by the DPW and for wastes disposed through Norcal.

[3] In order to produce composition profiles for wastes disposed by the DPW and for wastes disposed through Norcal, other DPW materials and other City self-hauled waste were assumed to have the same composition profile as self-hauled waste from businesses that have Norcal accounts.

[4] Waste from bulky item collection operations was assumed to have the same composition profile as waste collected by DPW packer trucks. This assumption was used to produce a composition profile for wastes disposed through Norcal.

Calculation of Waste Sector Quantities

Field Data Collection Procedures

Different methods were employed to characterize waste samples, depending on whether the characterization was based on hand-sorting or on visual techniques. Both methods are described below.

Procedures for Hand-Sorting Waste Samples

Selection of Vehicles for Sampling

Based on the list of vehicles that were expected to arrive at the SFR&D Transfer Station each day from the relevant waste sectors, a daily vehicle selection list was developed for each day of the September and February sampling periods. An example of the selection list for Tuesday, February 22, 2005 is shown below. The supervisor of the sorting crew used the vehicle selection list to identify targeted vehicles and direct them to the sampling area.

In most cases, the vehicle selection list included more vehicles for each category than were required to meet sampling quotas. The supervisor of the sorting crew obtained samples from vehicles in a given category in roughly the order they arrived at the transfer station, until the required number of samples was met.

Figure C-1: Example of Vehicle Selection List

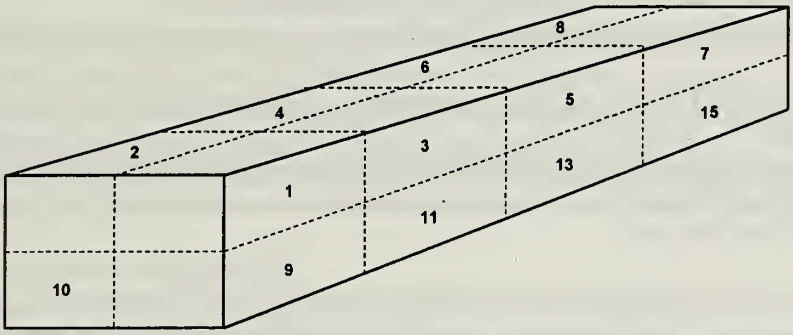
Expected loads for Tuesday, February 22

Number of samples to get	Check if sampled	Unique Number	Waste Sector	Route #	Hauler
4	☐	105	Fan3 SF	25B	GG
	☐	106	Fan3 SF	42	SS
	☐	107	Fan3 SF	090	SS
	☐	108	Fan3 SF	090	SS
	☐	109	Fan3 SF	014	GG
	☐	110	Fan3 SF	26A	GG
2	☐	111	Fan3 MF	104	GG
	☐	112	Fan3 MF	014	SS
	☐	113	Fan3 MF	072	SS
	☐	114	Fan3 MF	9B	GG
4	☐	115	Fan3 Com	29	GG
	☐	116	Fan3 Com	001	GG
	☐	117	Fan3 Com	17C	SS
	☐	118	Fan3 Com	029	SS
	☐	119	Fan3 Com	039	SS
	☐	120	Fan3 Com	035	GG
2	☐	121	Other MF	069	GG
	☐	122	Other MF	070	GG
	☐	123	Other MF	083	SS
	☐	124	Other MF	D1	SS
5	☐	125	Other Com	F3	GG
	☐	126	Other Com	D5	GG
	☐	127	Other Com	F6	SS
	☐	128	Other Com	D8	GG
	☐	129	Other Com	22A	GG
	☐	130	Other Com	040	GG
	☐	131	Other Com	2AA	SS

Extraction of Waste Samples

When a vehicle was selected for sampling, the manager of the sorting crew directed the driver to tip the load in an elongated pile on the ground. At this point, the pile was divided into an imaginary 16-cell grid, as shown in the diagram below, and approximately 200 to 300 pounds of material from the predetermined randomly selected cell (as designated on the vehicle selection list) was extracted from the pile using a loader or similar piece of equipment. This material became the actual sample, and it was placed on a tarp and dragged to the sorting area.

Figure C-2: 16-Cell Grid



After the extracted material was deposited on the tarp, the manager estimated the weight of each sample. If judged to be too light, additional material was pulled from the same cell area until the desired weight was achieved. Samples judged to be excessively heavy were pared down by removing a slice of material from the tarp.

Sorting of Waste Samples

Once a sample had been selected, extracted from the load, and placed on a clean tarp, it was sorted by hand into the prescribed material categories. (Please refer to Appendix B for the complete list and definitions of the material categories.) Materials were placed in plastic laundry baskets to be weighed and recorded. Members of the sorting crew typically specialize in groups of materials, but each is trained in the full list of components. Each crew person directed materials to the appropriate specialist.

The manager of the sorting crew monitored the homogeneity of the component baskets as material accumulated. Open laundry baskets allowed the manager to see the material at all times. The manager also verified the purity of each component as it was weighed, before recording the weight on the sampling form. Please refer to Appendix E for a copy of the sampling form.

After all materials had been weighed and their weights recorded, the hazardous waste portion of each sample was placed in a box, along with a cardboard label designating the origin of the sample and the amount of hazardous waste material that was present. The hazardous waste material from each sample was then transferred to the CalRecovery team, which was conducting a parallel study of the hazardous components of San Francisco's waste stream. Please refer to Appendix E for a copy of the transfer label.

Procedures for Visual Characterization of Waste Samples

Appropriate Application of Visual Characterization Method

Visual characterization of wastes involves closely observing the wastes and making detailed, quantitative records of the materials present, without physically sorting or weighing the materials. It has several limitations: it is less precise than weighing, and it relies heavily on the observer's judgment and ability to see everything in the load being characterized. Also, converting visual characterization data from observed volumes to inferred weights involves assumptions about the densities of materials; and some of those materials can have densities that cover a very broad range. For example, the density of loose prunings (shrubs and limbs) can range from 30 to over 100 pounds per cubic yard, so the use of a single density assumption will introduce error into some calculations.

Visual characterization also has some advantages over "physical" (weigh and sort) characterization:

- In loads that contain large objects and large homogeneous lumps of material (such as yard waste), the concentrations of these materials may be better represented.
- It is less labor intensive, providing more information (albeit less precise information) for the same effort.
- There is no need for concern about the validity of a subsample, because the entire load is being considered.
- It can provide insight into the ways that wastes are generated and disposed at specific locations, indicating recycling and waste reduction programs that are best suited for the needs and behaviors present at that location.

Visual characterization is particularly well suited to assess large loads generated by specific types of large businesses. For example, in San Francisco, one of the largest business sectors is hotels, and large hotels typically have their wastes removed in compactors that contain up to a week's worth of material in a single load. Examining several of these loads can provide useful data on which materials are discarded by most hotels, and which materials might be concentrated in some hotels but not in others. Similar inferences can be developed for other large business sectors as well.

Visual Characterization Method

Regulations promulgated by the California Integrated Waste Management Board (CIWMB) describe a procedure for visual waste characterization that was the basis for the methods used in this project. The CIWMB methods were adapted in several ways to fit the needs of this project. The major difference is that the CIWMB method uses two observers who independently assess a load, then agree on its composition. For this project, that was impractical, because it requires a substantial amount of time to make and discuss observations. At the SFR&D Transfer Station, the arrival times of loads were not highly predictable, and the work area was limited. Loads had to be assessed and cleared away very quickly to avoid creating a backlog that would interfere with traffic in the station. Consequently, a single observer was used. When possible, loads were photographed to provide an objective record of the contents.

Consistent with the CIWMB regulations, data were recorded on a volume-fraction basis, rather than attempting to estimate weight fractions. For example, if a 20-cubic-yard load appeared to hold 5 cubic yards of food waste and 15 cubic yards of prunings, then it was recorded as 25 percent food waste and 75 percent prunings. The differing densities of materials were taken into account in subsequent calculations, not during the actual observations.

If the load contained opaque trash bags, many of them were opened and examined prior to recording volume estimates. Due to time constraints, in most cases it was not possible to open all opaque bags. The bags that were opened were chosen from all parts of the load, and at least 15 to 20 bags were opened, to provide a broad cross-section of the contents. Typically, this procedure enabled the observer to see some repetition in the bags' contents, from one part of the load to another, indicating that several days' worth of refuse was being examined. It also provided some confidence that all of the materials in the load were being seen.

When a load consisted of relatively few materials in large proportions, estimating volume fractions was relatively simple. The smaller components required more attention. Two tests were applied by the observer:

1. How many multiples of this volume would take up as much space as the entire load?
2. What is the volume of the whole load, and the volume of this component?

Answers to these questions were used to estimate volume fractions.

After an initial pass to estimate material volumes as percentages, the observer would sum those percentages. The result was usually less than 100 percent. To correct this discrepancy, the observer would examine the load more closely and use a separate column on the data sheet to enter adjustments to bring various components up (or rarely, down) until a total of 100 percent was reached. All visual observations were performed by the same observer, who has extensive experience with the visual characterization of wastes.

A sample data sheet appears in Appendix E.

APPENDIX D

Waste Composition Calculations

Basic Composition Calculations

The composition estimates represent the **ratio of the components' weight to the total waste** for each noted substream. They were derived by summing each component's weight across all of the selected records and dividing by the sum of the total weight of waste, as shown in the following equation:

$$r_j = \frac{\sum_i c_{ij}}{\sum_i w_i}$$

where:

c = weight of particular component
w = sum of all component weights

for i = 1 to n
where n = number of selected samples

for j = 1 to m
where m = number of components

The confidence interval for this estimate was derived in two steps. First, the variance around the estimate was calculated, accounting for the fact that the ratio includes two random variables (the component and total sample weights). The **variance of the ratio estimator** equation follows:

$$\hat{V}_{r_j} = \left(\frac{1}{n}\right) \cdot \left(\frac{1}{\overline{w}^2}\right) \cdot \left(\frac{\sum_i \left(c_{ij} - r_j w_i\right)^2}{n-1}\right)$$

where:

$$\overline{w} = \frac{\sum_i w_i}{n}$$

Second, **precision levels** at the 90 percent confidence interval were calculated for a component's mean as follows:

$$r_j \pm \left(t \cdot \sqrt{\hat{V}_{r_j}}\right)$$

where:

t = the value of the t-statistic (1.645) corresponding to a 90% confidence level

For more detail, please refer to Chapter 6, "Ratio, Regression and Difference Estimation" of *Elementary Survey Sampling* by R.L. Scheaffer, W. Mendenhall and L. Ott (PWS Publishers, 1986).

Calculations to Aggregate Waste Sectors

The **weighted average for an overall composition estimate** was performed as follows:

$$O_j = \left(p_1 * r_{j1}\right) + (p_2 * r_{j2}) + (p_3 * r_{j3}) + \ldots$$

where:

p = the proportion of tonnage contributed by the noted substream
w = the ratio of component weight to the total waste weight in the noted substream

for i = 1 to m
where m = the number of components

The **variance of the weighted average** was calculated:

$$VarO_j = (p_1^{\,2} * \hat{V}_{r_{j1}}) + (p_2^{\,2} * \hat{V}_{r_{j2}}) + (p_3^{\,2} * \hat{V}_{r_{j3}}) + \ldots$$

APPENDIX E

Field Forms

Vehicle Selection Form

Expected loads for Tuesday, February 22

Number of samples to get	Check if sampled	Unique Number	Waste Sector	Route #	Hauler
4	☐	105	Fan3 SF	25B	GG
	☐	106	Fan3 SF	42	SS
	☐	107	Fan3 SF	090	SS
	☐	108	Fan3 SF	090	SS
	☐	109	Fan3 SF	014	GG
	☐	110	Fan3 SF	26A	GG
2	☐	111	Fan3 MF	104	GG
	☐	112	Fan3 MF	014	SS
	☐	113	Fan3 MF	072	SS
	☐	114	Fan3 MF	9B	GG
4	☐	115	Fan3 Com	29	GG
	☐	116	Fan3 Com	001	GG
	☐	117	Fan3 Com	17C	SS
	☐	118	Fan3 Com	029	SS
	☐	119	Fan3 Com	039	SS
	☐	120	Fan3 Com	035	GG
2	☐	121	Other MF	069	GG
	☐	122	Other MF	070	GG
	☐	123	Other MF	083	SS
	☐	124	Other MF	D1	SS
5	☐	125	Other Com	F3	GG
	☐	126	Other Com	D5	GG
	☐	127	Other Com	F6	SS
	☐	128	Other Com	D8	GG
	☐	129	Other Com	22A	GG
	☐	130	Other Com	040	GG
	☐	131	Other Com	2AA	SS

Hand-Sort Characterization Form

PAPER

Newspaper			
Plain OCC/Kraft			
Waxed OCC/Kraft			
Kraft Supermarket Bags			
Other Paper Bags			
High Grade			
Mixed Low Grade			
Polycoated			
Compostable/Soiled			
Composite/Other Paper			

PLASTIC

PET Bottles			
HDPE Natural Bottles			
HDPE Colored Bottles			
Other Plastic Bottles			
#2, 4 & 5 Non-Takeout T/C/L			
#2, 4 & 5 Takeout T/C/L			
#1, 3, 6 & 7 Non-Takeout T/C/L			
#1, 3, 6 & 7 Takeout T/C/L			
Non-Food Expanded Poly			
Other Food Service Plastics			
Other Rigid Packaging			
Clean Market Bags			
Contaminated Market Bags			
Clean Non-market Bags			
Contaminated Non-market Bags			
Other Clean Polyethylene Film			
Other Film			
Plastic Products			
Composite/Other Plastic			

METAL

Aluminum Cans			
Aluminum Foil/Containers			
Other Aluminum			
Other Nonferrous			
Tin/Steel Cans			
Other Ferrous			
Empty Paint/Aerosol Cans			
Empty Propane/Other Tanks			
Composite/Other Metals			

GLASS

Beverage Bottles			
Container Glass			
Plate Glass			
Composite/Other Glass			

ORGANIC

Grass			
Prunings			
Food			
Disposable Diapers			
Animal By-products			
Composite/Other Organic			

OTHER PRODUCTS

Tires			
Rubber			
Textiles			
Carpet/Upholstery			
Apparel			
Furniture			
Mattresses			
Appliances			
Composite/Other Products			

CONSTRUCTION DEBRIS

Clean Wood			
Pallets & Crates			
Stumps & Logs			
Composite/Other Wood			
Clean Gypsum			
Painted Gypsum			
Fiberglass Insulation			
Rock/Concrete/Bricks			
Asphaltic Roofing			
Ceramics			
Sand/Soil/Dirt/Grit/Fines			
Composite/Other Const. Debris			

HAZARDOUS WASTES			

Sample ID:

Route:

Sector:

Capture Date:

Sort Date:

Transfer Label for Hazardous Waste Portion of a Sample

Unique number: ______________________

Capture date: ______________________

Route # ______________________

Waste sector: ______________________

Total haz. weight: ________________ lbs.

Sample Data Sheet

Date __________ Time___________ By_________
Box No. _____
Size _______ Percent Full _________
Truck No. _______________

			est	adj
F1	Paper	Plain OCC/kraft		
F2	Paper	Waxed OCC/kraft		
F3	Paper	HighGrade Paper		
F4	Paper	Low Grade Paper (news & mixed)		
F5	Paper	Compostable / Soiled Paper		
F9	Paper	Composite/Other paper		
P1	Plastic	Rigids		
P2	Plastic	EPS foam		
P3	Plastic	Films		
P4	Plastic	Products		
P5	Plastic	AutoProductEmpties		
P9	Plastic	Composite/Other Plastic		
G1	Glass	Container		
G2	Glass	Plate		
G9	Glass	Composite/Other Glass		
M1	Metal	Containers/Foil		
M2	Metal	Other NonFerrous		
M3	Metal	Paint/Aerosol Cans		
M4	Metal	Compressed Gas Tanks		
M5	Metal	Other Ferrous		
M9	Metal	Composite/Other Metals		
R1	Organic	Grass		
R2	Organic	Prunings		
R3	Organic	Food		
R4	Organic	Disposable Diapers		
R5	Organic	Animal ByProducts		
R9	Organic	Composite/Other Organic		
O1	OtherProducts	Tires		
O2	OtherProducts	Rubber		
O3	OtherProducts	Textiles		
O4	OtherProducts	Carpet/Upholstery		
O5	OtherProducts	Furniture		
O6	OtherProducts	Mattresses		
O7	OtherProducts	Appliances		
O9	OtherProducts	Composite/Other Products		

Visual Characterization Data Sheet

Source _______________________
Notes _________________________
Sample Stream & Number __________ __________

			est	adj
C01	Const Debris	Clean Wood		
C02	Const Debris	Pallets/Crates		
C03	Const Debris	Stumps/Logs		
C04	Const Debris	Composite/Other Wood		
C05	Const Debris	Clean Gypsum		
C06	Const Debris	Painted Gypsum		
C07	Const Debris	FG Insulation		
C08	Const Debris	Rock/Conc/Brick		
C09	Const Debris	Asphaltic Roofing		
C10	Const Debris	Ceramics		
C11	Const Debris	Sand/Soil/Dirt/Grit/Fines		
C19	Const Debris	Composite/Other Const Debris		
H01	HazWastes	Paints/Glues/Solvents		
H02	HazWastes	Cleaning Products		
H03	HazWastes	Pesticides/Wood Preserv		
H04	HazWastes	Dry Cells		
H05	HazWastes	Wet Cells		
H06	HazWastes	Gasoline/Kerosene		
H07	HazWastes	Vehicle Fluids & Oil Filters		
H08	HazWastes	ACM		
H09	HazWastes	Treated Wood		
H10	HazWastes	Explosives		
H11	HazWastes	Medical		
H12	HazWastes	Lights		
H13	HazWastes	Mercury-Containing		
H14	HazWastes	Compressed Gas		
H15	HazWastes	CRT Devices		
H16	HazWastes	UWED's		
H17	HazWastes	Strong Oxidizers		
H18	HazWastes	Strong Reducing Agents		
H19	HazWastes	Waxes		
H20	HazWastes	Acids		
H21	HazWastes	Bases		
H22	HazWastes	Inks/Dyes		
H29	HazWastes	Other Potentially Harmful		

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: September 27, 2005

ITEM NO. 5

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Toxicity Profile of Disposed Waste Generated Within San Francisco

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***This list reflects the explanatory documents provided.**

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PREFACE

This study is one part of a waste characterization project performed for the San Francisco Department of the Environment by the following team of consultants:

- Environmental Science Associates, which provided project management, methodology development, visual waste characterization, and report preparation and production.
- CalRecovery, Inc., which provided methodology development, research, sample analysis, and report preparation.
- Sage Environmental, which provided methodology development.
- Cascadia Consulting Group, which provided methodology and database development, data analysis, and report preparation, as well as hand sorting of waste samples through their subcontractor Sky Valley Associates.
- Matthew J. Southworth, who provided tonnage stream data and sample planning.
- Eagle Eye Editing, which provided data entry, report preparation, and editing services.

The purpose of this project was to identify the major constituents in the San Francisco municipal solid waste stream. The study methods were designed to enable City staff to prioritize future efforts to divert wastes from disposal through the development of new waste reduction and recycling options for San Francisco businesses and residents. Samples from nearly 1,000 loads of solid waste from refuse collection route trucks, individual businesses, City departments, and private citizens were manually sorted or visually examined to compile profiles of waste stream constituents. This study focuses on the toxicity of materials found in many of those samples; a companion report describes the more general methods and findings for the project.

The study effort has been assisted at every step by the management and workers at the local affiliates of Norcal Waste Systems, Inc., and by staff in the Department of the Environment, the Department of Public Works, and the Recreation and Park Department. The assistance of these companies, agencies, and individuals is gratefully acknowledged.

SECTION I

Introduction

This report presents the results of a comprehensive characterization and analysis of nonregulated hazardous wastes (NHW) found in the disposed waste stream from generators located in San Francisco. The primary purpose of the study is to provide data and guidance for the City and County of San Francisco (City) to use in improving and/or implementing new programs to further reduce the toxicity of wastes generated and disposed within San Francisco. To meet this overall objective, the study addresses the quantities of NHW in solid waste disposed by generators within the city, estimates the toxicity of the NHW, and recommends methods of toxicity reduction that are indicated by the results of the analysis. CalRecovery, Inc. performed the characterization and analytical work under a subcontract agreement with Environmental Science Associates.

The San Francisco Department of the Environment operates a successful waste diversion and toxicity reduction program. The toxicity reduction program includes programs to reduce the toxicity of chemicals purchased by the City and to accept, process, treat, and/or properly dispose of toxic materials based on the characteristics and level of contamination.

The City desires to improve the quality of life in San Francisco through implementation of programs that protect public health and the environment. While specific regulations are directed toward controlling and minimizing the quantities of regulated hazardous waste that enter the solid waste stream, small amounts of toxic and otherwise hazardous substances enter the solid waste management system via discarded NHW. NHW is hazardous waste that is not subject to hazardous waste regulations because the quantities discarded by the generator are below the regulatory limit for that specific type of waste or the wastes are exempt from hazardous waste regulations. Under State of California regulations, households and businesses can legally dispose of small quantities of toxic wastes or items containing hazardous materials.

Two of the purposes of this study are to: (1) determine the quantities of NHW entering San Francisco's solid waste management system, and (2) estimate the relative hazards and risks posed by them. With this information, the toxicity of the solid waste stream has been estimated in order to provide a basis for evaluating the impact of NHW entering San Francisco's solid waste management system, and for identifying and prioritizing programs and strategies to reduce the impacts of this type of waste on solid waste workers, the public, and the environment.

This study presents a new method of estimating the relative hazards and risks posed by NHW in disposed waste for use as a planning tool by the City. This approach does not employ methods typically used in a classical health and environmental risk assessment, such as emitted chemical concentrations, air dispersion modeling (to estimate impacts on downwind receptors), and health risk analyses. Rather, the method is a synthesis of qualitative and quantitative parameters and utilizes toxicological and other information published by a number of organizations and governmental agencies.

The report is divided into three sections: methodology, results, and conclusions and recommendations. The Methodology section explains how NHW materials were found in waste samples and how they were analyzed; it also describes the toxicity profiling methods developed for this study. The Results section shows the outcome of applying the profiling methods to the data obtained both from waste samples and from scientific literature. The Conclusions and Recommendations section summarizes the findings and makes several recommendations for reducing waste stream toxicity and for measuring it more accurately.

Below are definitions of several terms that have specific meanings in the context of this study.

The *gross weight* of an item is the weight of a container and its contents. The *net weight* is the weight of the contents alone.

The materials that make up an item determine its waste *category*. Typical categories for items in wastes include Corrugated Cardboard, Aluminum Cans, Grass Clippings, Food Waste, etc. To classify items with a high potential for toxicity, it is useful to define more specific categories, such as Solvent-Based Adhesives/Glues, Mercury Thermostats/Switches, or Cosmetics. More general groupings of wastes, such as Organics, Metals or Hazardous Wastes, are referred to as waste *types*.

NHW Categories are those categories that encompass nonregulated hazardous wastes. This does not include categories like Grass Clippings, but does include categories like Mercury Thermostats/Switches.

Causative agents are the substances in a waste that can cause harm when they contact a person or are released into the environment. A waste item may contain several causative agents, only one of which is of immediate concern for the purposes of this study. For example, in a mercury thermostat or switch, the mercury in the switch is the causative agent of concern. The glass vial that contains the mercury could, if broken, cut someone, but it is the toxicity of the mercury that is of concern for this study.

SECTION II

Methodology

A. NHW in Disposed Waste

The composition of NHW in the City's disposed waste stream was estimated based on the results of two 1-week quantitative field characterization studies, performed in September 2004 and February 2005. The field characterization of NHW was a parallel analysis to the two disposed waste stream characterization field studies performed by Environmental Science Associates and Cascadia Consulting Group (2005).

During each of these field characterization studies, quantities of NHW were measured for a number of categories. The categories are described in Table 1. Appendix A presents a more detailed description of the NHW categories and provides examples of items included in each category.

As a consequence of the results of the first field characterization study (performed in September 2004) and some preliminary analysis of the potential toxicity of materials in certain NHW categories, two subcategories of NHW were identified and used during the second field study. The subcategories are chemically treated wood as part of the Treated Wood main category (as opposed to varnished or painted wood), and hair dye as part of the main category Cosmetics.

The work associated with the characterization of NHW consisted of the following. NHW items segregated by Sky Valley Associates were transferred to CalRecovery for categorization and subsequent analyses. After identifying the appropriate category for each item, CalRecovery determined the gross weight of the item. The objective of this analysis was to judge the potential toxicity and other hazards presented by disposed wastes; therefore, CalRecovery employed methods to determine the actual weights of potentially toxic materials in the City's disposed waste as opposed to relying on the gross weights of items, which typically overestimates the weights of the causative agents in or adhered to the bulk NHW items. The method is similar to that used by CalRecovery to assess the risks associated with NHW for the Puget Sound Council of Governments (CalRecovery, 1985). Using the CalRecovery method, if the potentially hazardous residue in or on the item could be segregated easily (e.g., liquid in a container), then CalRecovery personnel removed and weighed the residue separately. For example, the liquid or semiliquid materials in many metal, plastic, and glass containers were relatively easy to drain from the containers. In some cases, solids could also be removed from their containers, but in a number of cases the required effort was unreasonable because the solids had adhered to the container walls. For the small portion of the NHW items where the effort to remove the adhered

TABLE 1
NHW CATEGORIES USED IN THE TOXICITY PROFILING ANALYSIS

64. Latex Paints–Reusable
65. Latex Paints–Nonreusable
66. Solvent-Based Adhesives/Glues
67. Water-Based Adhesives/Glues
68. Petroleum-Based Paint
69. Pesticides/Herbicides/Wood Preservatives
70. Dry Cell Batteries–Nonrechargeable
71. Dry Cell Batteries–Rechargeable
72. Wet Cell Batteries
73. Gasoline/Kerosene/Diesel
74. Coolants/Antifreeze
75. Used Motor Oil
76. Other Motor Vehicle Fluids
77. Oil Filters
78. Asbestos-Containing Materials
79. Treated Wood
80. Explosives
81. Pharmaceuticals
82. Medical Wastes–Sharps
83. Medical Waste–Other
84. Incandescent Light Bulbs
85. Fluorescent Light Bulbs
86. Other Light Bulbs
87. Mercury Thermometers
88. Mercury Thermostats/Switches
89. Nonempty Compressed Gas Tanks/Cylinders
90. Televisions
91. Computer Monitors–liquid crystal display (LCD)
92. Computer Monitors–cathode ray tube (CRT)
93. CPUs
94. Other Computer Equipment
95. Other Electronics
96. Oxidizers
97. Acids
98. Bases
99. Other Chemicals or Cleaning Products
100. Solvents and Other Solvent-Based Products
101. Waxes
102. Cosmetics
103. Inks and Dyes
104. Other Potentially Harmful Wastes

material was unreasonable or impossible, CalRecovery personnel estimated the weight of the residue. The weight of the residue removed from its container is called the "net residue."

Two portable electronic scales were employed to measure the weights of materials and wastes. Large items were weighed on an A&D Company Model FV-15OKA1 platform scale, which has a resolution of 0.01 lbs. Small items and residues were weighed on an Ohaus Scout scale, which has a resolution of 0.01 grams. CalRecovery personnel recorded the weights of NHW materials on data collection sheets, along with other data relevant to the sample or source of waste. An example data collection form is provided in Appendix B.

B. Toxicity Profiling of NHW Constituents

Generally, the risk associated with the toxicity of waste materials is based on the type of agent, its concentration at the point of exposure, the susceptibility of the receptor, the route of exposure, and the duration of the exposure. The scope of work for the study called for a qualitative assessment of the potential toxicity of NHW in the City's disposed waste stream. Consequently, the types and levels of hazards and risks used to support the analysis were not based on a quantitative risk assessment methodology. Where feasible, CalRecovery used previous studies and lists of hazardous materials and wastes promulgated by governmental entities to assess the degree of risk or hazard (e.g., the State of California's list of known carcinogens, commonly called the "Prop 65 List"). Overall, CalRecovery estimated the relative risk of hazard to receptors based on: (1) the concentration of NHW in the disposed waste stream, (2) a composite hazard rating for each NHW category based on some representative constituents, and (3) the relative risk of exposure to materials in each NHW category. The values of relative risk were subsequently used to identify and prioritize potential categories of NHW for improved management or for further study.

The toxicity profile of the disposed waste stream was estimated using the following steps:

- Identification and selection of generic parameters that characterize the types of potential risks that NHW poses to humans and to the environment (e.g., acute toxicity or corrosivity, etc.). The environment of concern is that in and around land disposal facilities.
- Identification and selection of causative agents: representative chemical compounds and other agents in NHW that can be used to characterize the potential risk presented by the generic parameters (e.g., chemical compounds for acute toxicity, and type of microorganisms for pathogenecity, etc.).
- Estimation of the concentrations of materials in NHW categories in disposed solid waste generated in San Francisco.
- Estimation of the relative risk or probability of exposure of humans (workers or the public) or of the environment to the causative chemical compounds or other agents.

Since one of the fundamental bases of risk analysis is the type of causative agent, CalRecovery selected representative types of agents associated with each of the NHW categories. The scope of the study excluded performing chemical analyses on NHW items (or residues obtained therefrom) found during the field sampling and sorting work. Therefore, representative constituents or agents, primarily chemical compounds and elements, were selected based on several sources of information:

- Labels attached to NHW items found in waste samples during the quantitative field characterization studies
- Literature available in the public domain
- Previous data and information collected by CalRecovery on chemical compounds found in or identified with NHW

Information on labels attached to NHW items found during the sorting program was given the highest priority. However, other information sources were also used to characterize the contents of NHW found in the study because: (1) many NHW items found in the study did not have labels or the labels were not legible, and (2) previous studies of NHW in disposed waste have found that the contents of some NHW items are sometimes different than might be expected based on the type of container or the information available on the container label.

Appendix C presents a list of the categories of NHW used in the study and the chemical compounds and other agents that were selected to characterize each category.

Based on the selected causative agents, CalRecovery estimated the severity or level of hazard for each toxicity parameter (e.g., carcinogenicity, etc.) using a variety of information sources. The severity was estimated based on a governmental listing (e.g., Prop 65 List) if possible or, lacking a listing, on chemical or other properties of the agent (e.g., pH to determine degree of corrosivity). The sources of information and bases for these judgments are presented in Appendix D. CalRecovery estimated the severity of the hazard or degree of toxicity of each NHW category based on the rating for each hazard parameter and on the relative weighting assigned to each of the parameters. The severities of the hazards for the toxicity profiling parameters (e.g., corrosivity) and for each NHW category are provided in Appendix E. The method employed to assign weighting factors consisted of the following. The higher-value weightings were assigned to those hazard or toxicity parameters that would likely cause chronic, serious human health problems. Lower-value weightings were given to those hazard or toxicity parameters that would be likely to yield primarily acute, short-term effects on human health. Thus, the highest weighting of 20 was given to those hazard characteristics and chemical agents that exhibit characteristics of carcinogenicity/reproductivity toxicity, neurotoxicity, and endrocrine modification. This value served as one of the key bases for selecting values of weighting factors for the other hazard characteristics. The values of the weighting factors are listed in Table 2.

Another important purpose of the weighting factors was to normalize the relative contribution of each hazard characteristic to the overall hazard rating for a particular NHW category so that the overall hazard rating of that category was reasonable when compared to the ratings of the other categories. The normalization process is required because the numeric values assigned to represent levels of effect, risk, etc. within a particular hazard category (e.g., acute toxicity) are arbitrary when compared to those used for the other hazard categories.

CalRecovery computed the toxicity hazard rating for a particular NHW category by summing the ratings for each chemical or agent (e.g., lead, HIV, etc.) used to represent the chemical/pathogen content of that NHW category, and then multiplying the sum by the weighting assigned to each hazard category (e.g., 20 points for constituents that cause cancer or exhibit reproductive toxicity, etc.). The overall toxicity rating for each NHW category was then determined by summing the totals for each of the hazard characteristics.

TABLE 2
WEIGHTING FACTORS FOR THE HAZARD CHARACTERISTICS USED IN THE ANALYSIS

Hazard Characteristic	Weighting
Carcinogens/Reproductive Toxins	20
Neurotoxins	20
Pathogenicity	5
Ozone-Depleting Substances	3
Toxicity	5
Ignitability	3
Endocrine Modifiers	20
Surface or Groundwater Contamination	5
Corrosivity	3
Mechanical Injury (e.g., punctures)	1
Greenhouse Gases	3
Hypersensitivity (allergic) Reactions	1
Irritancy	1

As part of the analysis, CalRecovery also estimated the probability of exposure of humans (workers or the public) or the environment to the causative agent based on the NHW category and the most likely routes of exposure. This estimation is qualitative since a more rigorous and definitive analysis of exposure levels was outside the scope of the study. The values assigned to the estimated probabilities of exposure to NHW are listed by NHW category in Table 3. The values of exposure probability range from a value of 1, corresponding to a low risk or probability of exposure (e.g., individuals exposed to items containing latex paint), to a value of 8, corresponding to high risk of exposure (e.g., individuals exposed to televisions with a picture tube that might explode during processing). For a particular toxic hazard criterion, the probability of exposure and, therefore, the assigned numerical value varies depending on the type of receptor and on the subjective judgement of the analyst assigning the relative values.

The level of exposure to causative agents was assumed in the analysis to be represented by the concentration of materials in the particular NHW category in the disposed waste stream.

To define a judgment parameter for estimating the relative risk of hazard for each of the three types of receptors as a function of NHW category, CalRecovery assumed that the risk of hazard is directly proportional to: (1) the prevalence (i.e., the concentration of net residue) of materials in the NHW category, (2) the toxicity or hazard rating, and (3) the probability of exposure. Thus, the relative risk of hazard is greatest in those cases where the highest values are indicated for each of these factors for a particular NHW category and lowest where the values are uniformly low. Hazard values in between the maximum and the minimum occur in those instances where values for the three factors are in the mid-range, or in cases where low values for some factors are offset by high values for others.

TABLE 3
RELATIVE RISK OF EXPOSURE

	Relative Risk of Exposure		
	Occupational	Public	Environment
64. Latex Paints–Reusable	1	1	2
65. Latex Paints–Nonreusable	1	1	2
66. Solvent-Based Adhesives/Glues	3	3	6
67. Water-Based Adhesives/Glues	3	3	3
68. Petroleum-Based Paint	2	4	6
69. Pesticides/Herbicides/Wood Preservatives	7	7	7
70. Dry Cell Batteries–Nonrechargeable	1	1	2
71. Dry Cell Batteries–Rechargeable	1	1	4
72. Wet Cell Batteries	2	3	8
73. Gasoline/Kerosene/Diesel	5	5	8
74. Coolants/Antifreeze	6	6	2
75. Used Motor Oil	5	5	5
76. Other Motor Vehicle Fluids	5	5	5
77. Oil Filters	5	5	5
78. Asbestos-Containing Materials	6	3	6
79. Treated Wood (chemically treated only)	3	7	7
80. Explosives	3	3	3
81. Pharmaceuticals	2	2	1
82. Medical Wastes–Sharps	8	8	3
83. Medical Waste–Other	8	3	3
84. Incandescent Light Bulbs	4	4	4
85. Fluorescent Light Bulbs	6	4	4
86. Other Light Bulbs	4	2	2
87. Mercury Thermometers	2	4	8
88. Mercury Thermostats/Switches	4	2	8
89. Nonempty Compressed Gas Tanks/Cylinders	8	5	8
90. Televisions	8	5	8
91. Computer Monitors (LCD)	5	2	8
92. Computer Monitors (CRT)	7	3	8
93. CPUs	1	1	6
94. Other Computer Equipment	6	3	6
95. Other Electronics	3	1	6
96. Oxidizers	3	2	3
97. Acids	3	2	3
98. Bases	3	2	3
99. Other Chemicals or Cleaning Products	5	3	5
100. Solvents and Other Solvent-Based Products	5	3	5
101. Waxes	2	2	3
102. Cosmetics	2	4	7
103. Inks and Dyes	3	3	4
104. Other Potentially Harmful Wastes	3	3	3

The results obtained by applying the above method are dependent on the choices of specific chemicals and other agents to represent each NHW category, and on the numeric values assigned to the weighting factors.

C. Toxicity Profiling of Other Material Categories

In addition to NHW materials, disposed wastes include large volumes of other materials such as food, paper, plastics, etc. While these materials are generally thought to contribute little or nothing to the toxicity of disposed wastes, they do contain concentrations of some toxic chemical compounds, elements, and other agents. Consequently, these major categories also contribute to the toxicity profile of the City's disposed solid waste. There is no consensus method of comparing the toxicities of NHW material types with those of the major material categories. Therefore, CalRecovery examined some of the key differences among the characteristics of NHW and the major material categories, specifically the chemical compounds that are typically present in each. Some of the elemental metals that CalRecovery used to characterize and analyze the toxicity of NHW are also commonly found in the major material categories. This fact, coupled with the fact that most of the other types of toxic compounds and agents (i.e., non-metals) are primarily present only in NHW, means that the concentrations of metals can serve as a distinguishing feature between the two generic types of materials (i.e., NHW and the major material categories), and can be used to compare the toxicity of the two generic groups of wastes. CalRecovery analyzed information on the types of metals in NHRW and the major material categories and selected lead, nickel, and zinc as representative for the purposes of comparing the relative risk of hazard.

SECTION III

Results

A. Quantities and Composition of NHW in Disposed Waste

Figure 1 shows the estimated composition (as-received weight percentage [wt %]) of NHW net residue, broken down by the source of the materials sampled. The highest percentage of NHW was found in the Front Loader Multi-Family (FLMF) source, at approximately 2.5 wt %. The net residue value depicted in Figure 1 for the Roll-Off Compactor Multi-Family (ROCMF) source (approximately 0.06 wt %) excludes one outlier that resulted from a large, 50-lb discarded electronic device. This device constituted a high percentage of the weight of the sample and, if included, would have raised the average percentage of NHW in the ROCMF source to about 6.1%. Of all the samples analyzed, this sample was the only one that CalRecovery considered to contain an outlier.

Table 4 shows the estimated composition of NHW based on the weight of the net residue. The most prevalent NHW material category found in the study was Treated Wood, with a concentration of approximately 0.37 wt %. However, the majority of materials found in this category during the field study were painted or varnished wood, as opposed to chemically treated wood. Only one identifiable, significant item of chemically treated wood was found during the sampling and characterization field work—a single piece of chemically treated wood, weighing approximately 6.8 lbs, or about 0.02 wt % of the total weight of the samples. In the case of both painted/varnished and chemically treated wood materials found during the study, the vast majority of the weight reported as net residue was the mass of the wood, in contrast to the coatings or chemical compounds applied to the wood surface.

The second most prevalent category of NHW in the City's disposed waste was "Other Electronics"; the concentration of net residue for this category was approximately 0.20 wt %. This concentration does not include the large, discarded electronic item described earlier. Inclusion of this outlier would have increased the net residue concentration of Other Electronics to approximately 0.37 wt %.

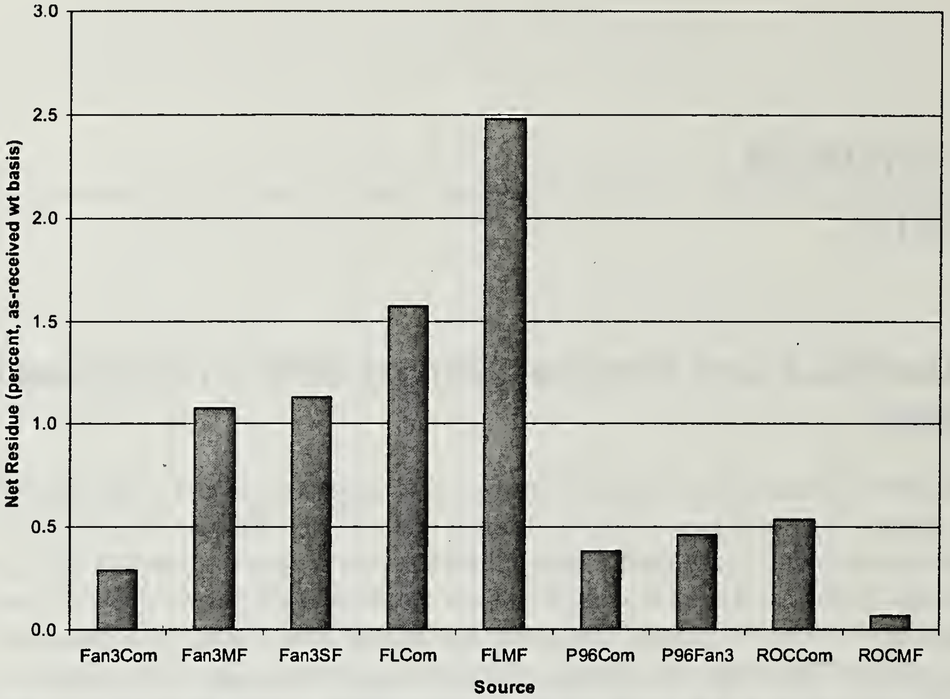

Figure 1. Percent Net Residue of NHW by Waste Source (as-received weight basis) Combined Results Autumn 2004 and Spring 2005

Legend for Sources of Wastes

Fan3Com = Fantastic 3/commercial
Fan3MF = Fantastic 3/multi-family
Fan3SF = Fantastic 3/single family
FLCom = Front loader/commercial
FLMF = Front loader/multi-family
P96Com = Pier 96/commercial line
P96Fan3 = Pier 96/Fantastic 3 line
ROCCom = Roll-off compactor/commercial
ROCMF = Roll-off compactor/multi-family

After Treated Wood and Other Electronics, a substantial drop-off occurs in the concentration of NHW. The third most prevalent category of NHW materials was Cosmetics, whose net residue was approximately 0.06 wt % in the disposed waste. The next most prevalent NHW categories after Cosmetics were Other Computer Equipment and the miscellaneous category Other Potentially Harmful Wastes, whose concentrations of net residues were slightly lower than the concentration estimated for Cosmetics.

Ten categories of NHW did not yield identifiable items or measurable quantities of residue based on the samples analyzed during the field characterization program. These categories were:

- Latex Paints–Reusable
- Wet Cell Batteries
- Coolants/Antifreeze
- Asbestos-Containing Materials
- Mercury Thermometers
- Mercury Thermostats/Switches
- Televisions
- Computer Monitors (LCD)
- Computer Monitors (CRT)
- Oxidizers

TABLE 4
COMPOSITION OF NHW IN SAN FRANCISCO'S DISPOSED WASTE

Category	% in Disposed Waste
79. Treated Wood	0.36874
95. Other Electronics	0.19788
102. Cosmetics	0.05689
94. Other Computer Equipment	0.05143
104. Other Potentially Harmful Wastes	0.04790
82. Medical Wastes–Sharps	0.02335
81. Pharmaceuticals	0.02221
93. CPUs	0.02067
70. Dry Cell Batteries–Nonrechargeable	0.01927
86. Other Light Bulbs	0.01866
65. Latex Paints–Nonreusable	0.01794
85. Fluorescent Light Bulbs	0.01455
68. Petroleum-Based Paint	0.01397
84. Incandescent Light Bulbs	0.01378
83. Medical Waste–Other	0.00567
99. Other Chemicals or Cleaning Products	0.00561
100. Solvents and Other Solvent-Based Products	0.00469
71. Dry Cell Batteries–Rechargeable	0.00359
67. Water-Based Adhesives/Glues	0.00191
80. Explosives	0.00167
69. Pesticides/Herbicides/Wood Preservatives	0.00142
103. Inks and Dyes	0.00098
75. Used Motor Oil	0.00079
76. Other Motor Vehicle Fluids	0.00047
66. Solvent-Based Adhesives/Glues	0.00034
73. Gasoline/Kerosene/Diesel	0.00027
98. Bases	0.00012
101. Waxes	0.00007
89. Nonempty Compressed Gas Tanks/Cylinders	0.00001
77. Oil Filters	0.00001
97. Acids	0.00001
64. Latex Paints–Reusable	0.00000
72. Wet Cell Batteries	0.00000
74. Coolants/Antifreeze	0.00000
78. Asbestos-Containing Materials	0.00000
87. Mercury Thermometers	0.00000
88. Mercury Thermostats/Switches	0.00000
90. Televisions	0.00000
91. Computer Monitors (LCD)	0.00000
92. Computer Monitors (CRT)	0.00000
96. Oxidizers	0.00000

In addition, no identifiable hair dye was found among the samples analyzed during the February 2005 field work, when this subcategory of Cosmetics was specifically targeted for observation and analysis.

Figure 2 shows the estimated concentrations of NHW as a function of the type of solid waste collection service. The highest concentrations of NHW were present for Treated Wood (both painted/varnished and chemically treated) and Other Electronics.

B. Toxicity Profiling of NHW Categories

A key step in compiling a toxicity profile of NHW in the City's disposed waste was estimating the hazard rating of each NHW category based on their representative chemical compounds and other agents. The estimated hazard ratings of the 41 NHW categories ranged from a high value of 205 (for Solvent-Based Adhesives and Petroleum-Based Paint) to a low value of 1 (for Incandescent Light Bulbs). The hazard rating is based on the characteristics of the materials and does not reflect the influence of the chemical concentration at the point of exposure, the route of exposure, the probability of exposure, or the type of receptor. The basis of the calculated hazard ratings for each NHW category is provided in Appendix E.

The hazard rating of each of the 41 NHW categories is shown in descending order in Table 5. Generally, a particular NHW category has a high hazard rating if it contains constituents that cause cancer or reproductive toxicity or are endocrine modifiers. For example, the hazard rating of 37 for Acids was derived by summing its ratings for surface or groundwater contamination (30), corrosivity (6), and hypersensitivity (1). For all other hazard rating criteria, the ratings for Acids were zero.

The rating for Treated Wood is based on chemical constituents that are characteristic of *chemically* treated wood, since exposure to chemically treated wood generally presents a greater risk to human health than exposure to painted or varnished wood.

The relative risk of hazard estimated for each NHW category and type of receptor is plotted logarithmically in Figure 3 in order to capture the wide range of values. As shown by the data in the figure, the range of values spans approximately four orders of magnitude.

If a risk of hazard value of approximately 10 is selected in Figure 3 as the first-tier priority level, then the following NHW categories exhibit the higher risk of hazard.

- Petroleum-Based Paints
- Treated Wood (chemically treated)
- Other Computer Equipment
- Other Electronics
- Cosmetics

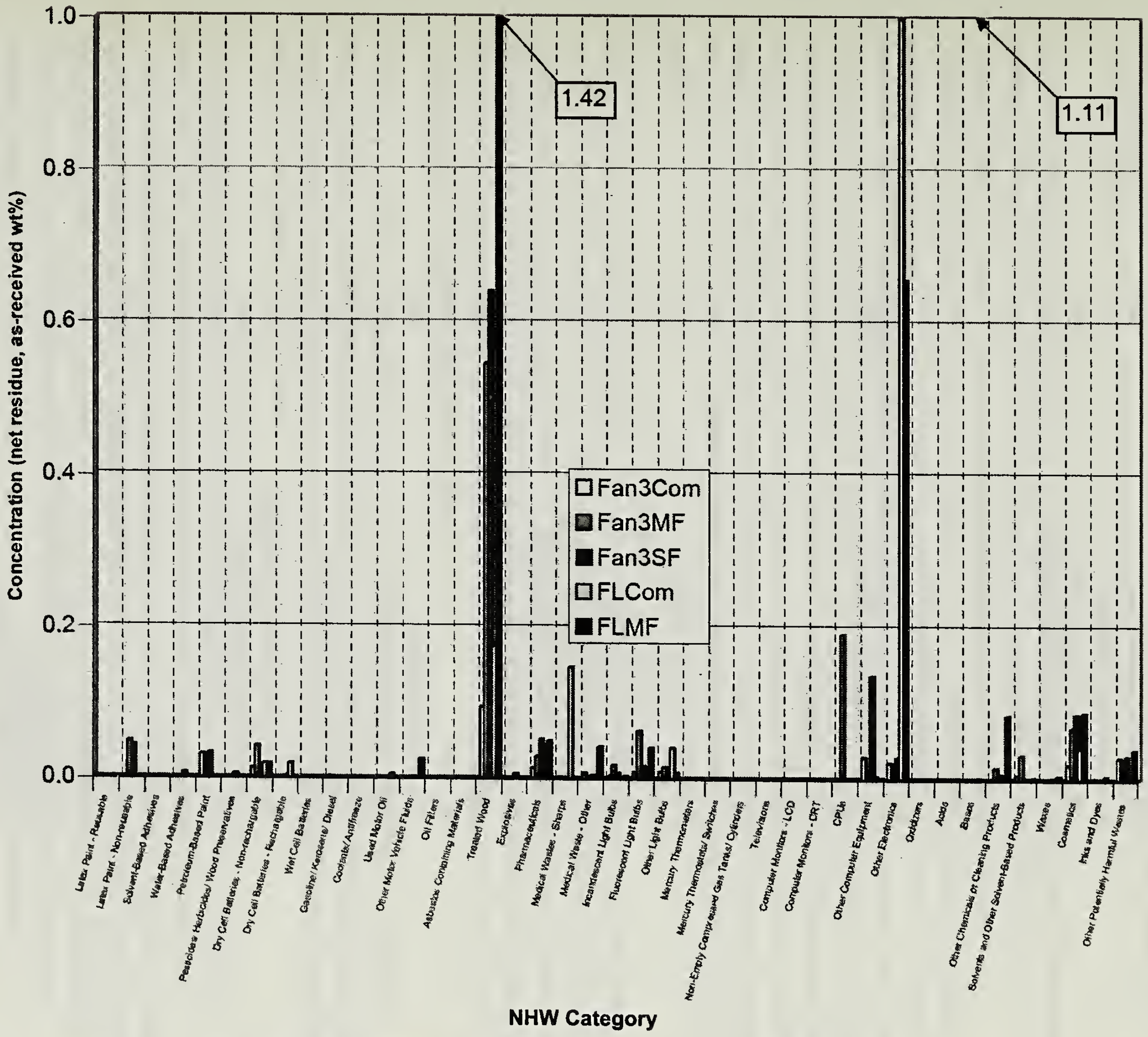

Figure 2. Concentration of NHW in San Francisco's Disposed Waste as a Function of Source

TABLE 5
HAZARD RATING OF NHW CATEGORIES
(ZERO = LOWEST HAZARD)

Category	Hazard Rating
66. Solvent-Based Adhesives/Glues	205
68. Petroleum-Based Paint	205
64. Latex Paints–Reusable	161
65. Latex Paints–Nonreusable	161
67. Water-Based Adhesives/Glues	161
79. Treated Wood	126
69. Pesticides/Herbicides/Wood Preservatives	125
90. Televisions	100
92. Computer Monitors (CRT)	100
93. CPUs	100
94. Other Computer Equipment	100
95. Other Electronics	100
103. Inks and Dyes	100
72. Wet Cell Batteries	79
102. Cosmetics	76
100. Solvents and Other Solvent-Based Products	74
73. Gasoline/Kerosene/Diesel	69
86. Other Light Bulbs	61
87. Mercury Thermometers	61
85. Fluorescent Light Bulbs	60
71. Dry Cell Batteries–Rechargeable	60
88. Mercury Thermostats/Switches	60
104. Other Potentially Harmful Wastes	59
98. Bases	39
97. Acids	37
74. Coolants/Antifreeze	33
82. Medical Wastes–Sharps	29
75. Used Motor Oil	26
76. Other Motor Vehicle Fluids	26
77. Oil Filters	26
70. Dry Cell Batteries–Nonrechargeable	20
78. Asbestos-Containing Materials	20
91. Computer Monitors (LCD)	20
96. Oxidizers	16
80. Explosives	13
89. Nonempty Compressed Gas Tanks/Cylinders	13
101. Waxes	13
99. Other Chemicals or Cleaning Products	12
81. Pharmaceuticals	8
83. Medical Waste–Other	8
84. Incandescent Light Bulbs	1

C. Toxicity Profiling of Other Material Categories

In the Methodology section above, it was noted that non-NHW categories of disposed wastes contain concentrations of some toxic chemical compounds, elements, and other agents that may contribute to the overall toxicity of the disposed waste stream. For this study, certain metals—lead, nickel and zinc—were used to evaluate the relative risk of hazard from these non-NHW material categories.

Similar to the case of estimating relative risk among the NHW material categories, CalRecovery computed the relative risk based on the estimated concentration of the material type in the disposed waste; the relative hazard rating for lead, nickel, and zinc; and the relative risk or probability of exposure. The relative hazard rating of the three metals is 89, which would place materials with this value at approximately the bottom of the top one-third of the list of ratings shown in Table 4. The relative risk of exposure used in the analysis for occupational, public, and environment receptors are 1, 1, and 3, respectively. These relatively low risks reflect the fact that the elemental metals are inherently bound, chemically or physically, in the items composing the major material categories, and also that the primary exposure would be due to events at a landfill facility that could liberate the metals into the environment (as opposed to, for instance, the lower risk that these bound metals would pose to waste collection personnel or to the waste-generating public).

Based on the conditions of this analysis, the higher values of relative risk associated with major material types are those calculated for food waste (values of approximately 30 and 90, depending on the type of receptor, as shown in Table 6). Because of the method employed by CalRecovery to compute the relative risk, these high values of risk for food waste are primarily due to the high concentration of food waste in the City's disposed waste stream, as opposed to a high inherent hazard posed by the constituents of food waste.

Mixed paper is the major material category representing the next highest value of relative risk among the major material categories. The values are approximately 17 and 50, depending on the type of receptor. As in the case of food waste, the high concentration of mixed paper is prompting a high value of relative risk of hazard.

In a separate but related analysis, CalRecovery estimated the total loading of lead, nickel, and zinc in the City's disposed waste using chemical fingerprints of major waste types that the company developed from several waste characterization studies and laboratory analyses of waste types. Based on this analysis, CalRecovery estimates that food wastes and mixed paper contribute approximately 19% and 12%, respectively, of the loading of the three metals from all waste types. Therefore, while the relative magnitude of the risk of hazard mentioned above for these two material categories may be overstated, these material categories apparently contribute substantially to the metal loading of wastes being disposed.

TABLE 6
RELATIVE RISK OF HAZARD ASSOCIATED WITH MAJOR MATERIAL TYPES [a]

		Relative Risk of Exposure		
Material	**Wt %**	**Occupational**	**Public**	**Environment**
Corrugated cardboard	4.9%	4.3	4.3	13.0
Newsprint	4.3%	3.8	3.8	11.5
Mixed Paper	18.6%	16.6	16.6	49.7
Plastic	12.6%	11.2	11.2	33.6
Yard Waste	1.8%	1.6	1.6	4.7
Wood	2.1%	1.9	1.9	5.7
Food Waste	33.6%	29.9	29.9	89.8
Textiles	4.5%	4.0	4.0	12.1
Other Organic	5.6%	5.0	5.0	15.0
Ferrous	3.2%	2.9	2.9	8.7
Aluminum	0.5%	0.4	0.4	1.2
Glass	2.8%	2.5	2.5	7.5
Other Inorganic	3.3%	2.9	2.9	8.7

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[a] Hazard rating (based on lead, nickel and zinc) = 89

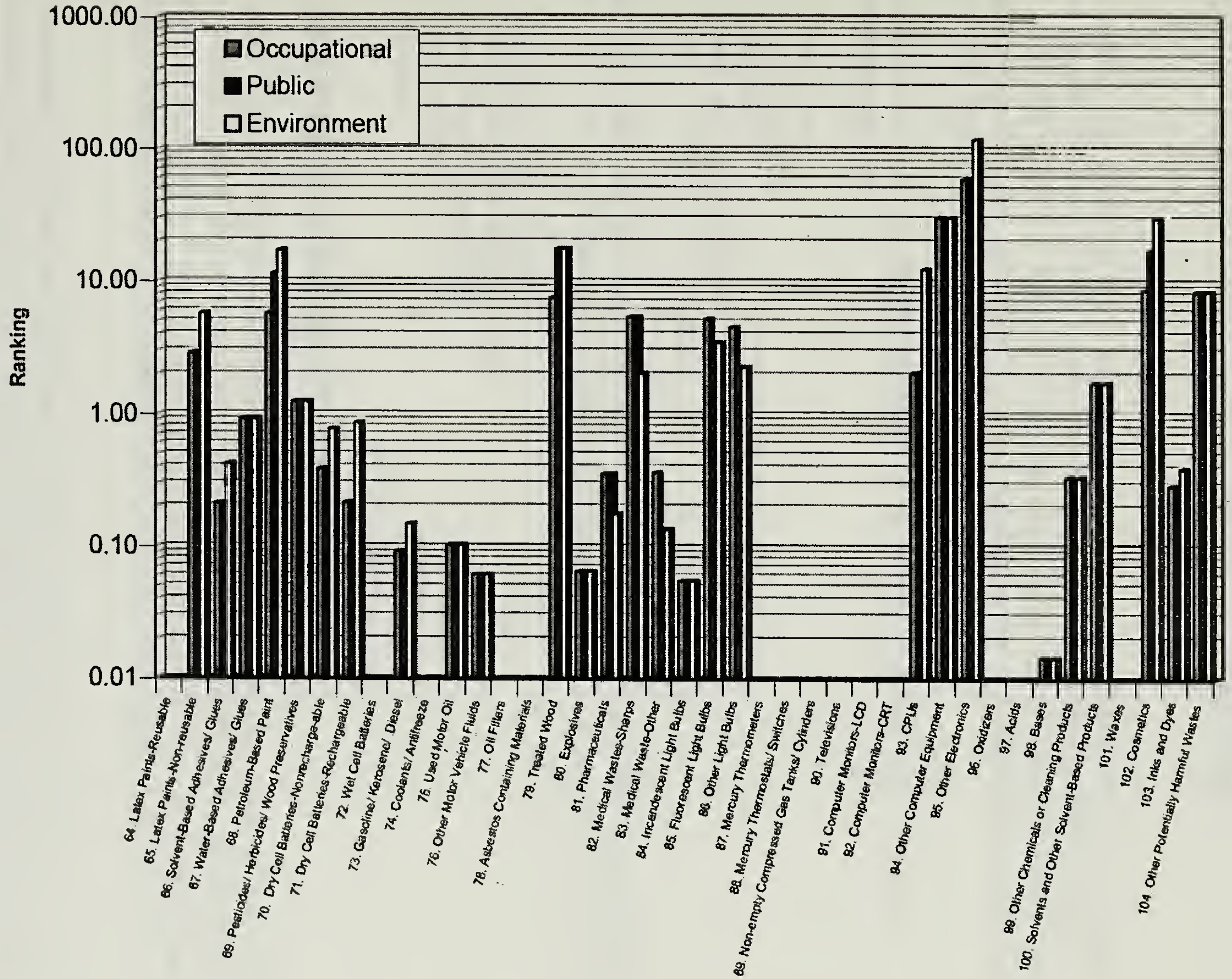

Figure 3. Relative Risk of Hazard as a Function of NHW Category

SECTION IV

Conclusions and Recommendations

The methodology described in this study can be used as a tool to manage NHW in the disposed waste stream. The key conclusions and recommendations of the study are described below.
The net residue of NHW in San Francisco's disposed waste is approximately 0.9 wt %. The net residue ranged from approximately 0.1 wt % for roll-off compactors from multi-family generators to 2.5 wt % for front loaders servicing multi-family residences.

In terms of net residue, the most prevalent NHW in the City's disposed waste stream, in descending order, are:

- Treated Wood
- Other Electronics
- Cosmetics
- Other Computer Equipment
- Other Potentially Harmful Wastes

Using the methodology developed for the study, CalRecovery has identified the following five NHW categories as those representing the greatest potential risk to humans and the environment:

- Petroleum-Based Paints
- Treated Wood (chemically treated)
- Other Computer Equipment
- Other Electronics
- Cosmetics

A. Recommended Measures

The substitution of latex paints for petroleum-based paints would assist in reducing the toxicity of paint materials in the disposed waste stream. Furthermore, emphasizing the need (or offering incentives to paint users) to use up the contents of paint containers and to recycle leftover paint, whether petroleum-based or latex, would decrease the toxicity of the City's disposed waste stream.

The concentration of treated wood (painted, varnished, and chemically treated) in the disposed waste stream as well as its estimated relative toxicity indicate that this waste category should be targeted for reduction and/or diversion programs. For example, a program to recover treated wood, remove the surface coatings, and market the "clean" wood materials would increase the City's waste diversion level and reduce the toxicity of waste being landfilled, assuming the hazardous residues from wood processing and recovery were properly treated and/or disposed. The City would need to determine the feasibility of implementing this type of program as well as the types of waste generators to target (e.g., commercial enterprises, construction companies, etc.).

Implementation of additional recovery and recycling programs for electronic equipment would decrease the quantities of Other Computer Equipment and Other Electronics. The State mandate for jurisdictions to implement programs to better manage Universal Waste in 2006 may represent an opportunity to target Other Computer Equipment and Other Electronics for separate collection, processing, and recycling.

The last category in the above priority list is Cosmetics. It would likely be difficult to identify and implement practical methods of reducing the contribution of this category of NHW to the overall toxicity of the disposed waste stream. Analysis of the cosmetic samples taken during the field study indicates that reducing the contribution from Cosmetics would be difficult for several reasons: the sheer number of cosmetic products and their disparate formulations, the likely poor yield of marketable ingredients if containers are processed, and the fact that much of the discarded material is unusable.

While medical sharps do not pose one of the more substantial risks identified in the study, they were present in many samples of waste. The risks associated with medical sharps in the City's disposed waste (primarily solid waste workers suffering punctures or scrapes from sharps) could conceivably be reduced by programs directed toward increasing the segregation of sharps from other wastes by the generator and separate packaging of the segregated sharps in dedicated sharps containers. Alternately, fully automated waste collection methods would reduce the risk to collection workers due to punctures from sharps. However, processing staff that handle or sort mixed waste for material recovery would be at risk of punctures from sharps and subsequent infections if they are not properly protected.

B. Need for Comparative Data

CalRecovery performed an exhaustive analysis of potential hazard criteria and methods for valuing the degree of hazard for each of the NHW categories that were the subject of this study. The company found that a system is lacking for characterizing and judging the toxicity of the solid waste stream. Lack of published toxicity characterization data from a single source is the most important barrier to developing more effective analytical tools for managing NHW. For this research, CalRecovery reviewed data from dozens of organizations and agencies in order to adequately characterize the NHW materials and the risks posed by them. Much of the data was in conflict or was ambiguous, or its reliability could not be determined. In some cases, lists promulgated by federal or state agencies were available and helpful, but those instances were few. While CalRecovery constructed a qualitative method of evaluation for this study, a lack of reliable and organized data precludes cost-effective quantitative evaluations of the risks posed by NHW. Efforts to improve data quality and to develop a consensus method of systematic analysis would yield a better management tool for use by scientists and decision-makers.

The results obtained by applying the method developed by CalRecovery are particularly sensitive to the specific chemicals and other agents that were selected to represent each NHW category, and to the numeric values of the weighting factors. Selection of more and/or other chemicals or agents to characterize the NHW categories or of different weighting factors could lead to results that are different than those obtained in this analysis.

SECTION V

References

1. *Characterization of San Francisco's Disposed Waste, 2004–2005*, prepared by Cascadia Consulting Group and Environmental Science Associates for the City and County of San Francisco, August 2005.

2. Characterization and Impacts of Nonregulated Hazardous Waste in the Solid Waste of King County, prepared by CalRecovery for Puget Sound Council of Governments, December 1985.

APPENDIX A

Detailed Description of NHW Categories Used in the Study

2005 SAN FRANCISCO WASTE COMPOSITION STUDY
NONREGULATED HAZARDOUS WASTE CATEGORIES

64. Latex Paints–Reusable	Water-based paints and similar products that are reusable (e.g., smooth liquid devoid of significant chips or clumps).
65. Latex Paints–Nonreusable	Water-based paints and similar products that are not reusable (e.g., high viscous liquid or liquid having significant chips or clumps).
66. Solvent-Based Adhesives/Glues	Oil/resin/volatile-solvent-based glues and adhesives, including epoxy, rubber cement, two-part glues and sealers, and auto body fillers.
67. Water-Based Adhesives/Glues	Water-based glues, caulking compounds, grouts, and spackle.
68. Petroleum-Based Paint	Solvent-based paints, varnishes, and similar products.
69. Pesticides/Herbicides/Wood Preservatives	Variety of products with the purpose of discouraging or killing insects, weeds, or microorganisms. Fungicides and wood preservatives, such as pentachlorophenol, are also included.
70. Dry Cell Batteries–Nonrechargeable	Dry cell batteries of various sizes and types as commonly used in households (includes button cell batteries).
71. Dry Cell Batteries–Rechargeable	Rechargeable batteries of various sizes and shapes (includes cell phone batteries).
72. Wet Cell Batteries	Wet cell batteries of various sizes and types as commonly used in automobiles.
73. Gasoline/Kerosene/Diesel	Gasoline, diesel fuel, and fuel oils.
74. Coolants/Antifreeze	Coolants such as propylene and ethylene glycol.
75. Used Motor Oil	Lubricating oils primarily used in vehicles, but including other types with similar characteristics.
76. Other Motor Vehicle Fluids	Motor vehicle fluids other than gasoline and lubricating fluids (e.g., grease, and hydraulic, transmission, and brake fluids).
77. Oil Filters	Metal oil filters used in cars and other equipment.
78. Asbestos-Containing Materials	Asbestos and wastes containing primarily asbestos fibers.
79. Treated Wood	79 A. Painted or Varnished Wood: Lumber and wood products that have been painted or varnished (with generally 5% or more of the surface area coated). 79 B. Chemically Treated Wood: Lumber or wood that has been chemically treated.
80. Explosives	Gunpowder, unspent ammunition, picric acid, and other potentially explosive chemicals.
81. Pharmaceuticals	Any medicine intended for human or veterinary use, including both prescription and nonprescription drugs.
82. Medical Wastes–Sharps	Sharp medical instruments and devices such as hypodermic and IV needles and scalpels.
83. Medical Waste–Other	Health care materials other than sharps, such as IV tubing and patient drapes, specimen containers, and petri dishes.

84. Incandescent Light Bulbs	Incandescent light bulbs of various sizes.
85. Fluorescent Light Bulbs	Fluorescent light tubes and compact fluorescents containing mercury vapor and fluorescent coating on the inner surface of the glass.
86. Other Light Bulbs	Light bulbs other than incandescent or fluorescent, including mercury, sodium vapor, and halogen lamps.
87. Mercury Thermometers	Thermometers containing liquid mercury.
88. Mercury Thermostats/Switches	Thermostats containing mercury switches and other switches containing liquid mercury.
89. Nonempty Compressed Gas Tanks/Cylinders	Pressure tanks, vessels, or cylinders whose gaseous content is under pressure.
90. Televisions	Television devices or sets containing a cathode ray tube (CRT) or flat panel screen.
91. Computer Monitors (LCD)	Computers or computer monitors containing liquid crystal displays.
92. Computer Monitors (CRT)	Computer monitors containing cathode ray tubes.
93. CPUs	Central processing units.
94. Other Computer Equipment	Computer peripherals not containing monitors, such as mice, keyboards, disk drives, printers, copiers, and toner cartridges.
95. Other Electronics	Other equipment containing electronic "chips," integrated circuits, or circuit boards, such as cell phones, fax machines, PDAs, stereos, radios, tape decks, VCRs, games, and toys.
96. Oxidizers	Compounds that give up oxygen easily or remove hydrogen from another compound, or attract negative electrons (e.g., hydrogen peroxide).
97. Acids	Strong and weak acids (e.g., hydrochloric acid).
98. Bases	Strong and weak bases (e.g., sodium hydroxide).
99. Other Chemicals or Cleaning Products	Cleaners other than those containing acids, bases, or petroleum-based products.
100. Solvents and Other Solvent-Based Products	Solvent-based products of petroleum origin other than those specifically listed elsewhere in the list (e.g., petroleum-based paints). For example, this category would include but not be limited to chlorinated and flammable solvents, paint strippers, solvents contaminated with other products such as paints, degreasers and some other cleaners if the primary ingredient is (or was) a solvent, or alcohol such as methanol and isopropanol.
101. Waxes	Substances containing petroleum products used to polish surfaces (e.g., floor, car, and furniture waxes).
102. Cosmetics	102 A. Hair Dye Products: Preparations and products designed to color or tint human hair. 102 B. Non-Hair-Dye Products: Preparations and products designed to beautify the human body (e.g., fingernail polish and eye shadow, but excluding hair dye preparations and products).
103. Inks and Dyes	For example, clothing dyes, writing and printing inks.
104. Other Potentially Harmful Wastes	Other chemicals or potentially harmful wastes that do not fit into the above categories, including unidentifiable materials that may pose a risk to human health or safety.

APPENDIX B

Data Collection Form Used for the Field Characterization Study

Location: SF Transfer Station

Sample ID No.: ____________ Total HHW Wt (lb): ________

Sample Capture Date: ______________

Sort Date: ________________________

Route: ____________________

Data Recorder: ____________

Sector: ___________________

Sample Count No.: _________

			Gross Wt of Items		Item Total Volume				
Item #	**Description**	**No. of Item(s)**	**Value**	**Units**	**Value**	**Units**	**Phase (L, G, or S)**	**Est'd Remain. Residue Fraction**	**Notes**
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Notes:									

APPENDIX C

List of NHW Categories and Chemical Compounds and/or Other Agents Selected to Characterize the Hazards of Each Category

Category	Description	Problematic Chemicals/Constituents [a]
64. Latex Paints–Reusable	Water-based paints and similar products that are reusable (e.g., smooth liquid devoid of significant chips or clumps).	Resins, glycol ethers, esters, pigments, phenyl mercuric acetate METHYL ETHYL KETONE TOTAL XYLENES ACETONE CHROMIUM LEAD ZINC *Phenylmercuric* acetate
65. Latex Paints–Nonreusable	Water-based paints and similar products that are not reusable (e.g., high viscous liquid or liquid having significant chips or clumps).	Resins, glycol ethers, esters, pigments, phenyl mercuric acetate (Assumed similar characteristics to #64)
66. Solvent-Based Adhesives/Glues	Oil/resin/volatile-solvent-based glues and adhesives, including epoxy, rubber cement, two-part glues and sealers, and auto body fillers.	Hydrocarbons, including volatile organic compounds (VOCs), toluene, xylenes (Assumed similar characteristics to #68)
67. Water-Based Adhesives/Glues	Water-based glues, caulking compounds, grouts, and spackle.	(Assumed similar characteristics to #64)
68. Petroleum-Based Paint	Solvent-based paints, varnishes, and similar products.	Hydrocarbons, including toluene, xylenes, heavy metals Ethyl benzene Xylene Toluene Acetone CHROMIUM LEAD ZINC Unknown Prop. 65 chemical

Category	Description	Problematic Chemicals/Constituents [a]
69. Pesticides/ Herbicides/Wood Preservatives	Variety of products with the purpose of discouraging or killing insects, weeds, or microorganisms. Fungicides and wood preservatives, such as pentachlorophenol, are also included.	Hydrocarbons, including chlorinated; arsenic; copper Fipronil 1,1,2,2 TETRACHLOROETHANE ETHYL BENZENE *Arsenic* *Copper*
70. Dry Cell Batteries–Nonrechargeable	Dry cell batteries of various sizes and types as commonly used in households. Includes button cell batteries.	Heavy metals (e.g., mercury) *Mercury* COPPER ZINC
71. Dry Cell Batteries–Rechargeable	Rechargeable batteries of various sizes and shapes. Includes cell phone batteries.	Heavy metals (e.g., nickel, copper, cadmium) Copper Cadmium Nickel
72. Wet Cell Batteries	Wet cell batteries of various sizes and types as commonly used in automobiles.	Heavy metals (e.g., lead), acids (e.g., sulfuric) *Lead* Sulfuric acid
73. Gasoline/ Kerosene/Diesel	Gasoline, diesel fuel, and fuel oils.	Hydrocarbons (e.g., benzene, etc.) *Gasoline (unleaded)* *Benzene*
74. Coolants/ Antifreeze	Coolants such as propylene and ethylene glycol.	Propylene glycol, ethylene glycol *Propylene glycol* *Ethylene glycol*
75. Used Motor Oil	Lubricating oils, primarily used in vehicles, but including other types with similar characteristics.	Hydrocarbons *Used motor oil*
76. Other Motor Vehicle Fluids	Motor vehicle fluids other than gasoline and lubricating fluids (e.g., grease, and hydraulic, transmission, and brake fluids).	Hydrocarbons, including VOCs (Assumed similar characteristics to #75)
77. Oil Filters	Metal oil filters used in cars and other equipment.	Hydrocarbons *Used motor oil*
78. Asbestos-Containing Materials	Asbestos and wastes containing primarily asbestos fibers.	Asbestos *Asbestos*
79. Treated Wood	Lumber and wood products that have been chemically treated or painted (with generally 5% or more of the surface area coated).	Copper, pentachlorophenol, arsenic *Arsenic* *Copper* *Pentachlorophenol*
80. Explosives	Gunpowder, unspent ammunition, picric acid, and other potentially explosive chemicals.	*Butane*
81. Pharmaceuticals	Any medicine intended for human or veterinary use, including both prescription and nonprescription drugs.	Cancer-therapeutic Butylated hydroxytoluene
82. Medical Wastes–Sharps	Sharp medical instruments and devices such as scalpels and hypodermic and IV needles.	HIV, Hepatitis C *HIV, Hepatitis C*

Category	Description	Problematic Chemicals/Constituents [a]
83. Medical Waste–Other	Health care materials other than sharps, such as IV tubing and patient drapes, specimen containers, and petri dishes.	*Pathogens*
84. Incandescent Light Bulbs	Incandescent light bulbs of various sizes.	*Tungsten*
85. Fluorescent Light Bulbs	Fluorescent light tubes and compact fluorescents containing mercury vapor and fluorescent coating on the inner surface of the glass.	*Mercury*
86. Other Light Bulbs	Light bulbs other than incandescent or fluorescent, including mercury, sodium vapor, and halogen lamps.	Heavy metals (e.g., mercury) *Mercury*
87. Mercury Thermometers	Thermometers containing liquid mercury.	*Mercury*
88. Mercury Thermostats/ Switches	Thermostats containing mercury switches and other switches containing liquid mercury.	*Mercury*
89. Nonempty Compressed Gas Tanks/Cylinders	Pressure tanks, vessels, or cylinders whose gaseous content is under pressure.	Flammable gas Butane
90. Televisions	Television devices or sets containing a cathode ray tube (CRT) or flat panel screen.	Heavy metals Lead Copper Nickel
91. Computer Monitors–LCD	Computers or computer monitors containing liquid crystal displays.	*Barium* [b] Chromium [b]
92. Computer Monitors–CRT	Computer monitors containing cathode ray tubes.	Lead [c] Copper Nickel
93. CPUs	Central processing units.	Lead [c] Copper [c] Nickel [c]
94. Other Computer Equipment	Computer peripherals not containing monitors, such as mice, keyboards, disk drives, printers, copiers, and toner cartridges.	(Assumed similar characteristics to #93)
95. Other Electronics	Other equipment containing electronic "chips," integrated circuits or circuit boards, such as cell phones, fax machines, PDAs, stereos, radios, tape decks, VCRs, games, and toys.	(Assumed similar characteristics to #93)
96. Oxidizers	Compounds that give up oxygen easily or remove hydrogen from another compound, or attract negative electrons (e.g., hydrogen peroxide).	Oxygenated compounds, including hydrogen peroxide *Hydrogen peroxide*
97. Acids	Strong and weak acids (e.g., hydrochloric acid).	Hydrochloric, sulfuric, nitric acids *Nitric acid* *Sulfuric acid*
98. Bases	Strong and weak bases (e.g., sodium hydroxide).	Sodium hydroxide, ammonium hydroxide Sodium hydroxide Sodium hypochlorite

Category	Description	Problematic Chemicals/Constituents [a]
99. Other Chemicals or Cleaning Products	Cleaners other than those containing acids, bases, or petroleum-based products.	Trisodium phosphate Trisodium phosphate
100. Solvents and Other Solvent-Based Products	Solvent-based products of petroleum origin other than those specifically listed elsewhere in the list (e.g., petroleum-based paints). For example, this category would include but not be limited to chlorinated and flammable solvents, paint strippers, solvents contaminated with other products such as paints, degreasers and some other cleaners if the primary ingredient is (or was) a solvent, or alcohol such as methanol and isopropanol.	Hydrocarbons, including chlorinated, xylenes, toluene *Xylene* Isopropyl alcohol Toluene
101. Waxes	Substances containing petroleum products used to polish surfaces (e.g., floor, car, and furniture waxes).	Hydrocarbons, including VOCs *Xylene*
102. Cosmetics	Preparations and products designed to beautify the human body (e.g., fingernail polish and eye shadow).	Acetone, xylenes, amines, diamines, toluene, phthalate, parabens Triethanolamine Toluene *Xylene* Diethyl phthalate
103. Inks and Dyes	For example, clothing dyes, writing and printing inks.	CHROMIUM COPPER LEAD ZINC
104. Other Potentially Harmful Wastes	Other chemicals or potentially harmful wastes that do not fit into the above categories, including unidentifiable materials that may pose a risk to human health or safety.	Sodium phosphate Xylene Methyl (n-amyl) ketone Ethyl benzene

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Notes:

[a] General chemical classes and constituents if listed immediately to the right of the category name are taken from various literature sources. Within each category, representative chemicals and other agents are listed below the general chemical classes and agents. Unless otherwise noted, the problematic chemicals/constituents: in lowercase font are based on information recorded from labels on Sort 1 and 2 NHW items, in UPPERCASE font are based on information from CalRecovery (1985), and *italic* font are based on other literature sources or CalRecovery experience.

[b] Senate Bill 20 Report, *Determination of Regulated Elements in Discarded Laptop Computers, LCD Monitors, Plasma TVs and LCD TVs*, Hazardous Materials Laboratory, California Department of Toxic Substances Control, December 2004.

[c] Product Profile: Computer/CPUs, Oregon Department of Environmental Quality, March 2001.

Chromium is assumed to be present as Chromium VI.

APPENDIX D

Sources of Information and Basis of Hazard Ratings

Toxicity Profiling Parameter	Sources and Basis of Ratings
Carcinogen/Reproductive Toxicity	State of California Proposition 65 list of agents known to cause cancer or reproductive toxicity: Known = 1, not listed = 0, na = not applicable
Neurotoxicity	Cholinesterase inhibitor listed by the State of California Department of Pesticide Regulation or listed in Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986. Listed = 1, not listed = 0.
Pathogenecity	HIV and Hepatitus B are the primary pathogen risks for NHW per Dr. Edward Wei, Professor, School of Public Health, University of California (Berkeley). Serious disease potential = 5, slight disease potential = 1, nonpathogenic = 0.
Ozone-Depleting Substances	U.S. Environmental Protection Agency (US EPA) listing of ozone-depleting substances (www.epa.gov/ozone/ods.html), May 19, 2005. Listed = 1, not listed = 0.
Toxicity	Acute toxicity ratings based on US EPA toxicity rankings if supported by U.S. National Toxics Program Acute Toxicity Studies. Acute toxicity to rats based on oral (LD_{50}), dermal (LD_{50}), and inhalation (LC_{50}). High = 3, moderate = 2, slight = 1, not acutely toxic = 0. Pesticide Action Network Pesticide Database (www.pesticideinfo.org).
Ignitability (degrees Celsius)	Material Safety Data Sheets and other references. US EPA standard for ignitability characteristic (less than or equal to 60 degrees C): <60 deg C = 1, 60 deg C = 0.
Endocrine Modifiers	Listed by the State of Illinois Environmental Protection Agency (IL EPA) (Endocrine Disruptors Strategy, February 1997) as a known, probable, or suspected endocrine disruptor. Known = 3, probable = 2, suspect = 1, on IL EPA list.
Surface or Groundwater Contamination	Potential for contamination of water resources is assumed a function of solubility in water. Handbook of Chemistry and Physics, CRC Press, 56th edition. Insoluble = 0, slightly soluble = 1, soluble = 2, very soluble/miscible = 3.
Corrosivity	Material Safety Data Sheets and other references; US EPA standard for corrosivity characteristic: pH > 12.5 or < 2.
Mechanical Injury (e.g., punctures)	CalRecovery. Criterion: potential of NHW item to inflict mechanical injury. High potential = 1, low potential = 0.
Greenhouse Gas Precusors	CalRecovery. Criterion: potential to form greenhouse gases (e.g., carbon dioxide, methane, and nitrous oxide) as by-products of biological decomposition of chemical compounds. High potential = 1, low or no potential = 0.
Hypersensitivity (allergic) Reactions	Material Safety Data Sheets. No data or not irritant = 0, slight = 1, moderate = 2, severe = 3.
Irritancy	Material Safety Data Sheets and/or Western Regional Pollution Prevention Network website (www.wrppn.org) information: Eye or Skin or Inhalation. No data or not irritant = 0, slight irritant = 1, irritant = 2, severe irritant = 3.

APPENDIX E

Hazard Rating Criteria – NHW Categories

Category	Problematic Chemicals/ Constituent [a]	Carcinogen/ Reproductive Toxicity	Neurotoxins	Pathogenicity	Ozone-Depleting Substances	Toxicity	Ignitability	Endocrine Modifiers	Surface or Groundwater Contamination	Corrosivity	Mechanical Injury (e.g., punctures)	Greenhouse Gas Precusors	Hypersensitivity (allergic) Reactions	Irritancy
64. Latex Paints–Reusable	Resins, glycol ethers, esters, pigments, phenyl mercuric acetate	40	0	0	0	15	12	40	30	3	0	12	0	9
	METHYL ETHYL KETONE	0	0	0	0	1	1	0	3	0	0	1	0	3
	TOTAL XYLENES	0	0	0	0	1	1	0	0	0	0	1	0	2
	ACETONE	0	0	0	0	1	1	0	3	0	0	1	0	2
	CHROMIUM	1	0	0	0	isd	0	0	isd	0	0	0	0	0
	LEAD	1	0	0	0	isd	0	2	isd	0	0	0	0	0
	ZINC	0	0	0	0	isd	0	0	isd	0	0	0	0	0
	Phenylmercuric acetate	0	0	0	0	isd	1	0	isd	1	0	1	0	2
65. Latex Paints–Nonreusable	Resins, glycol ethers, esters, pigments, phenyl mercuric acetate (Assumed similar characteristics to #64)	40	0	0	0	15	12	40	30	3	0	12	0	9
66. Solvent-Based Adhesives/ Glues	Hydrocarbons, including VOCs, toluene, xylenes (Assumed similar characteristics to #68)	100	0	0	0	20	12	40	15	0	0	12	0	6
67. Water-Based Adhesives/Glues	(Assumed similar characteristics to #64)	40	0	0	0	15	12	40	30	3	0	12	0	9
68. Petroleum-Based Paint	Hydrocarbons, including toluene, xylenes, heavy metals	100	0	0	0	20	12	40	15	0	0	12	0	6
	Ethyl benzene	1	0	0	0	1	1	0	0	0	0	1	0	0
	Xylene	0	0	0	0	1	1	0	0	0	0	1	0	2

Category	Problematic Chemicals/ Constituent [a]	Carcinogen/ Reproductive Toxicity	Neurotoxins	Pathogenicity	Ozone-Depleting Substances	Toxicity	Ignitability	Endocrine Modifiers	Surface or Groundwater Contamination	Corrosivity	Mechanical Injury (e.g., punctures)	Greenhouse Gas Precusors	Hypersensitivity (allergic) Reactions	Irritancy
	Toluene	1	0	0	0	1	1	0	0	0	0	1	0	2
	Acetone	0	0	0	0	1	1	0	3	0	0	1	0	2
	CHROMIUM	1	0	0	0	isd	0	0	isd	0	0	0	0	0
	LEAD	1	0	0	0	isd	0	2	isd	0	0	0	0	0
	ZINC	0	0	0	0	isd	0	0	isd	0	0	0	0	0
	Unknown Prop. 65 chemical	1	isd	isd	isd	isd	isd	isd	isd	isd	isd	isd	isd	isd
69. Pesticides/ Herbicides/Wood Preservatives	Hydrocarbons, including chlorinated; arsenic; copper	60	20	0	0	15	3	0	15	3	0	9	0	0
	Fipronil	0	0	0	0	isd	0	0	1	0	0	1	0	0
	1,1,2,2 TETRACHLOROETHANE	1	0	0	0	2	0	0	2	1	0	1	0	0
	ETHYL BENZENE	1	0	0	0	1	1	0	0	0	0	1	0	0
	Arsenic	1	0	0	0	isd	0	0	isd	0	0	0	0	0
	Copper	0	1	0	0	isd	0	0	isd	0	0	0	0	0
70. Dry Cell Batteries–Nonrechargeable	Heavy metals (e.g., mercury)	20	0	0	0	0	0	0	0	0	0	0	0	0
	Mercury	1	0	0	0	isd	0	2	isd	0	1	0	0	0
	COPPER	0	1	0	0	isd	0	0	isd	0	0	0	0	0
	ZINC	0	0	0	0	isd	0	0	isd	0	0	0	0	0
71. Dry Cell Batteries–Rechargeable	Heavy metals (e.g., nickel, copper, cadmium)	40	20	0	0	0	0	0	0	0	0	0	0	0
	Copper	0	1	0	0	isd	0	0	isd	0	0	0	0	0
	Cadmium	1	0	0	0	isd	0	0	isd	0	0	0	0	0
	Nickel	1	0	0	0	isd	0	0	isd	0	0	0	0	0
72. Wet Cell Batteries	Heavy metals (e.g., lead), acids (e.g., sulfuric)	20	0	0	0	0	0	40	15	3	0	0	1	0

Category	Problematic Chemicals/ Constituent [a]	Carcinogen/ Reproductive Toxicity	Neurotoxins	Pathogenicity	Ozone-Depleting Substances	Toxicity	Ignitability	Endocrine Modifiers	Surface or Groundwater Contamination	Corrosivity	Mechanical Injury (e.g., punctures)	Greenhouse Gas Precusors	Hypersensitivity (allergic) Reactions	Irritancy
	Lead	1	0	0	0	isd	0	2	isd	0	0	0	0	0
	Sulfuric acid	0	0	0	0	isd	0	0	3	1	0	0	1	0
73. Gasoline/ Kerosene/Diesel	Hydrocarbons (e.g., benzene, etc.)	40	0	0	0	5	6	0	10	0	0	6	0	2
	Gasoline (unleaded)	1	0	0	0	0	1	0	0	0	0	1	0	0
	Benzene	1	0	0	0	1	1	0	2	0	0	1	0	2
74. Coolants/ Antifreeze	Propylene glycol, ethylene glycol	0	0	0	0	5	0	0	15	3	0	6	0	4
	Propylene glycol	0	0	0	0	0	0	0	3	1	0	1	0	2
	Ethylene glycol	0	0	0	0	1	0	0	0	0	0	1	0	2
75. Used Motor Oil	Hydrocarbons	20	0	0	0	0	3	0	0	0	0	3	0	0
	Used motor oil	1	0	0	0	0	1	0	0	0	0	1	0	0
76. Other Motor Vehicle Fluids	Hydrocarbons, including VOCs	20	0	0	0	0	3	0	0	0	0	3	0	0
	(Assumed similar characteristics to #75)	1	0	0	0	0	1	0	0	0	0	1	0	0
77. Oil Filters	Hydrocarbons	20	0	0	0	0	3	0	0	0	0	3	0	0
	Used motor oil	1	0	0	0	0	1	0	0	0	0	1	0	0
78. Asbestos-Containing Materials	Asbestos	20	0	0	0	0	0	0	0	0	0	0	0	0
	Asbestos	1	0	0	0	isd	0	0	0	0	0	0	0	0
79. Treated Wood	Copper, pentachlorophenol, arsenic	40	20	0	0	15	0	40	5	3	0	3	0	0
	Arsenic	1	0	0	0	isd	0	0	isd	0	0	0	0	0
	Copper	0	1	0	0	isd	0	0	isd	0	0	0	0	0
	Pentachlorophenol	1	0	0	0	3	0	2	1	1	0	1	0	0
80. Explosives		0	0	0	0	0	3	0	10	0	0	0	0	0

Category	Problematic Chemicals/ Constituent [a]	Carcinogen/ Reproductive Toxicity	Neurotoxins	Pathogenicity	Ozone-Depleting Substances	Toxicity	Ignitability	Endocrine Modifiers	Surface or Groundwater Contamination	Corrosivity	Mechanical Injury (e.g., punctures)	Greenhouse Gas Precusors	Hypersensitivity (allergic) Reactions	Irritancy
	Butane	0	0	0	0	0	1	0	2	0	0	0	0	0
81. Pharmaceuticals	Cancer-therapeutic	0	0	0	0	5	0	0	0	0	0	3	0	0
	Butylated hydroxytoluene	0	0	0	0	1	0	0	isd	0	0	1	0	0
82. Medical Wastes–Sharps	HIV, Hepatitis C	0	0	25	0	0	0	0	0	0	1	3	0	0
	HIV, Hepatitis C	0	isd	5	isd	isd	isd	isd	isd	isd	0	1	isd	isd
83. Medical Waste–Other		0	0	5	0	0	0	0	0	0	0	3	0	0
	Pathogens	isd	isd	1	isd	isd	isd	isd	isd	isd	0	1	isd	isd
84. Incandescent Light Bulbs		0	0	0	0	0	0	0	0	0	1	0	0	0
	Tungsten	0	0	0	0	isd	0	0	isd	0	0	0	0	0
85. Fluorescent Light Bulbs		20	0	0	0	0	0	40	0	0	0	0	0	0
	Mercury	1	0	0	0	isd	0	2	isd	0	0	0	0	0
86. Other Light Bulbs	Heavy metals (e.g., mercury)	20	0	0	0	0	0	40	0	0	1	0	0	0
	Mercury	1	0	0	0	isd	0	2	isd	0	0	0	0	0
87. Mercury Thermometers		20	0	0	0	0	0	40	0	0	1	0	0	0
	Mercury	1	0	0	0	isd	0	2	isd	0	0	0	0	0
88. Mercury Thermostats/ Switches		20	0	0	0	0	0	40	0	0	0	0	0	0
	Mercury	1	0	0	0	isd	0	2	isd	0	0	0	0	0
89. Nonempty Compressed Gas Tanks/Cylinders	Flammable gas	0	0	0	0	0	3	0	10	0	0	0	0	0
	Butane	0	0	0	0	0	1	0	2	0	0	0	0	0
90. Televisions	Heavy metals	40	20	0	0	0	0	40	0	0	0	0	0	0
	Lead	1	0	0	0	isd	0	2	isd	0	0	0	0	0
	Copper	0	1	0	0	isd	0	0	isd	0	0	0	0	0
	Nickel	1	0	0	0	isd	0	0	isd	0	0	0	0	0

Category	Problematic Chemicals/ Constituent [a]	Carcinogen/ Reproductive Toxicity	Neurotoxins	Pathogenicity	Ozone-Depleting Substances	Toxicity	Ignitability	Endocrine Modifiers	Surface or Groundwater Contamination	Corrosivity	Mechanical Injury (e.g., punctures)	Greenhouse Gas Precusors	Hypersensitivity (allergic) Reactions	Irritancy
91. Computer Monitors (LCD)		20	0	0	0	0	0	0	0	0	0	0	0	0
	Barium [b]	0	0	0	0	isd	0	0	isd	0	0	0	0	0
	Chromium [b]	1	0	0	0	isd	0	0	isd	0	0	0	0	0
92. Computer Monitors (CRT)		40	20	0	0	0	0	40	0	0	0	0	0	0
	Lead [c]	1	0	0	0	isd	0	2	isd	0	0	0	0	0
	Copper	0	1	0	0	isd	0	0	isd	0	0	0	0	0
	Nickel	1	0	0	0	isd	0	0	isd	0	0	0	0	0
93. CPUs		40	20	0	0	0	0	40	0	0	0	0	0	0
	Lead [c]	1	0	0	0	isd	0	2	isd	0	0	0	0	0
	Copper [c]	0	1	0	0	isd	0	0	isd	0	0	0	0	0
	Nickel [c]	1	0	0	0	isd	0	0	isd	0	0	0	0	0
94. Other Computer Equipment	(Assumed similar characteristics to #93)	40	20	0	0	0	0	40	0	0	0	0	0	0
95. Other Electronics	(Assumed similar characteristics to #93)	40	20	0	0	0	0	40	0	0	0	0	0	0
96. Oxidizers	Oxygenated compounds, including hydrogen peroxide	0	0	0	0	0	0	0	15	0	0	0	1	0
	Hydrogen peroxide	0	0	0	0	isd	0	0	3	0	0	0	1	0
97. Acids	Hydrochloric, sulfuric, nitric acids	0	0	0	0	0	0	0	30	6	0	0	1	0
	Nitric acid	0	0	0	0	isd	0	0	3	1	0	0	0	0
	Sulfuric acid	0	0	0	0	isd	0	0	3	1	0	0	1	0
98. Bases	Sodium hydroxide, ammonium hydroxide	0	0	0	0	0	0	0	30	6	0	0	1	2
	Sodium hydroxide	0	0	0	0	isd	0	0	3	1	0	0	0	0

Category	Problematic Chemicals/ Constituent [a]	Carcinogen/ Reproductive Toxicity	Neurotoxins	Pathogenicity	Ozone-Depleting Substances	Toxicity	Ignitability	Endocrine Modifiers	Surface or Groundwater Contamination	Corrosivity	Mechanical Injury (e.g., punctures)	Greenhouse Gas Precusors	Hypersensitivity (allergic) Reactions	Irritancy
	Sodium hypochlorite	0	0	0	0	isd	0	0	3	1	0	0	1	2
99. Other Chemicals or Cleaning Products	Trisodium phosphate	0	0	0	0	0	0	0	10	0	0	0	0	2
	Trisodium phosphate	0	0	0	0	isd	0	0	2	0	0	0	0	2
100. Solvents and Other Solvent-Based Products	Hydrocarbons, including chlorinated, xylenes, toluene	20	0	0	0	15	9	0	15	0	0	9	0	6
	Xylene	0	0	0	0	1	1	0	0	0	0	1	0	2
	Isopropyl alcohol	0	0	0	0	1	1	0	3	0	0	1	0	2
	Toluene	1	0	0	0	1	1	0	0	0	0	1	0	2
101. Waxes	Hydrocarbons, including VOCs	0	0	0	0	5	3	0	0	0	0	3	0	2
	Xylene	0	0	0	0	1	1	0	0	0	0	1	0	2
102. Cosmetics	Acetone, xylenes, amines, diamines, toluene, phthalate, parabens	20	0	0	0	10	6	0	20	3	0	12	0	5
	Triethanolamine	0	0	0	0	0	0	0	3	1	0	1	0	1
	Toluene	1	0	0	0	1	1	0	0	0	0	1	0	2
	Xylene	0	0	0	0	1	1	0	0	0	0	1	0	2
	Diethyl phthalate	0	0	0	0	0	0	0	1	0	0	1	0	0
103. Inks and Dyes		40	20	0	0	0	0	40	0	0	0	0	0	0
	CHROMIUM	1	0	0	0	isd	0	0	isd	0	0	0	0	0
	COPPER	0	1	0	0	isd	0	0	isd	0	0	0	0	0
	LEAD	1	0	0	0	isd	0	2	isd	0	0	0	0	0
	ZINC	0	0	0	0	isd	0	0	isd	0	0	0	0	0

Category	Problematic Chemicals/ Constituent [a]	Carcinogen/ Reproductive Toxicity	Neurotoxins	Pathogenicity	Ozone-Depleting Substances	Toxicity	Ignitability	Endocrine Modifiers	Surface or Groundwater Contamination	Corrosivity	Mechanical Injury (e.g., punctures)	Greenhouse Gas Precusors	Hypersensitivity (allergic) Reactions	Irritancy
104. Other Potentially Harmful Wastes		20	0	0	0	10	6	0	10	0	0	9	0	4
	Sodium phosphate	0	0	0	0	0	0	0	2	0	0	0	0	0
	Xylene	0	0	0	0	1	1	0	0	0	0	1	0	2
	Methyl (n-amyl) ketone	0	0	0	0	isd	0	0	0	0	0	1	0	2
	Ethyl benzene	1	0	0	0	1	1	0	0	0	0	1	0	0

Notes:

[a] General chemical classes and constituents if listed immediately to the right of the category name are taken from various literature sources. Within each category, representative chemicals and other agents are listed below the general chemical classes and agents. Unless otherwise noted, the problematic chemicals/constituents: in lowercase font are based on information recorded from labels on Sort 1 and 2 NHW items, in UPPERCASE font are based on information from CalRecovery (1985), and *italic* font are based on other literature sources or CalRecovery experience.

[b] Senate Bill 20 Report, *Determination of Regulated Elements in Discarded Laptop Computers, LCD Monitors, Plasma TVs and LCD TVs*, Hazardous Materials Laboratory, California Department of Toxic Substances Control, December 2004.

[c] Product Profile: Computer/CPUs, Oregon Department of Environmental Quality, March 2001.

Chromium is assumed to be present as Chromium VI.
isd = insufficient data

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: September 27, 2005 **ITEM NO. 7**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Board of Supervisors Ordinance File No. 050922 (Introduced May 24, 2005)

☒ Commission Resolution Supporting Ordinance File No. 050922 (Draft)

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***This list reflects the explanatory documents provided.**

FILE NO. 050922 ORDINANCE NO.

[Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses.]

Ordinance amending the Payroll Expense Tax Ordinance to establish a tax exclusion for qualified renewable energy businesses, as specified.

Note: Additions are *single-underline italics Times New Roman*;
deletions are ~~*strikethrough italics Times New Roman*~~.
Board amendment additions are double underlined.
Board amendment deletions are ~~strikethrough normal~~.

Be it ordained by the People of the City and County of San Francisco:

Section 1. The San Francisco Business and Tax Regulations Code is hereby amended by adding Sections 906.2 of Article 12-A (Payroll Expense Tax Ordinance), as follows:

SEC. 906.2. RENEWABLE ENERGY BUSINESS EXCLUSION.

(a) Any person engaging in a renewable energy business within the City that employs a full-time staff of ten or more may exclude from their payroll expense all compensation paid to, on behalf of or for the benefit of all employees of that person, and all distributions by an Association by way of salary to those having an ownership interest in such Association, who or that perform substantially all work or render substantially all services in direct support of such person's renewable energy business, subject to the conditions and limitations set forth in this Section. For purposes of this Section, outside independent contractors shall not be considered employees of the renewable energy business.

(b) For purposes of this section, "renewable energy business" means a business that develops renewable energy sources including electrical energy produced by wind, solar energy, hydropower, landfill gas, waste to energy, geothermal resources, ocean thermal energy conversion, wave energy, biomass, including municipal solid waste, biofuels, or fuels derived from organic sources, hydrogen fuels derived from renewable energy, or fuel cells where the fuel is derived from renewable sources. "Renewable energy business" also means a business that produces electrical energy savings brought about by the use of solar and heat pump water heating, seawater air-conditioning district cooling

systems, solar air-conditioning and ice storage, quantifiable energy conservation measures, use of rejected heat from co-generation and combined heat and power systems excluding fossil-fueled qualifying facilities that sell electricity to electric utility companies.

(c) The renewable energy exclusion authorized under this Section shall be available to and may be taken by each person engaging in the renewable energy business in the City for a period of ten years from the effective date of this Section or the commencement of the person's renewable energy business in the City, whichever is later. The date the Tax Collector received the person's application for a business registration certificate for the person's renewable energy business shall be presumed to be the date of commencement of such business unless the person establishes a different commencement date to the satisfaction of the Tax Collector.

(d) The renewable energy exclusion authorized under this Section shall expire on the fifteenth anniversary date of the effective date of this Section. A person may not use or claim any unused portion of the ten year renewable energy exclusion after the expiration date of this Section. Unless exempted under Sections 906 of this Article, every person engaging in the renewable energy business in the City shall pay the tax imposed under this Article on the full amount of the person's payroll expense attributable to the City from and after the expiration of this Section.

(e) If a person's calculated liability for the Payroll Expense Tax does not exceed $2,500 for the tax year after applying the renewable energy exclusion under this Section, the person shall be exempt from payment of the Payroll Expense Tax for that tax year as provided in Section 905-A.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: ______________________
Carol A. Boardman
Deputy City Attorney

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: September 27, 2005 **ITEM NO.** 8

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ San Francisco Environment Regulations SFE2005-01-PPO and SFE2005-02-PPO

☒ How Commodities are Purchased under SF's Precautionary Purchasing Ordinance

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***This list reflects the explanatory documents provided.**

San Francisco Department of the Environment Regulation #SFE-05-01-PPO:
Regulation Adopting an Approved Alternatives List for
(1) Products Covered In The Federal Comprehensive
Procurement Guidelines Other Than Printing And Writing Paper Products;
(2) Products Not Listed in the Federal Comprehensive Procurement Guidelines;
(3) Batteries; and
(4) Vehicle Fuel
Precautionary Purchasing Ordinance (Ord. No. 115-05)
Effective July 18, 2005

A. Authorization.

The Board of Supervisors and Mayor enacted the Precautionary Purchasing Ordinance , effective July 18, 2005 (the "Ordinance"). The Ordinance is codified as Chapter 2 of the Environment Code. The Ordinance creates a comprehensive new system for the City to identify and use environmentally preferable products based on goals and criteria established by the Ordinance. In order to consolidate various existing requirements for environmentally preferable purchasing into the new City-wide program, the Ordinance repeals existing requirements relating to purchases of: (1) Products Covered in the Federal Comprehensive Procurement Guidelines (CPG) Other Than Printing And Writing Paper Products; (2) Products Not Listed in the CPG; (3) Batteries; and (4) Vehicle fuel and requires the Director of the Department of the Environment to immediately adopt the same requirements as regulations effective on the effective date of the Ordinance. (See section 3 of the Ordinance). Future changes to these requirements, including changes to make them more consistent with the new program, can be made after a public hearing pursuant to Environment Code section 203(d).

B. Findings.

The adoption of these regulations is in compliance with the directives of the Ordinance.

C. Scope and Requirements.

The attached regulations set forth the scope and requirements pertaining to each product category listed above, and are subject to the requirements of the Ordinance, including the definitions, requirements pertaining to waivers, and enforcement mechanisms set forth in the Ordinance The regulations do not duplicate the Ordinance, and must be read together with the Ordinance. Unless otherwise defined below, words used in this regulation shall have the same meanings as those words in Chapter 21 of the Administrative Code and Chapter 2 of the Environment Code.

For the product categories outlined above, *City departments may purchase only those products approved in the attached regulations.*

D. Enforcement.

These regulations have the full force and effect of law. A violation of these regulations is enforceable pursuant to Environment Code section 208.

The Director of the Department of the Environment hereby adopts these regulations, effective as of July 18, 2005.

Jared Blumenfeld
Director Department of the Environment

Approved:

Date:
July 14, 2005

I. WAIVERS

A. WAIVER FORM AND WAIVER PROCESS

1. If a department considers it essential to purchase products that do not comply with the regulations, a waiver must be obtained from the Office of Contract Administration (see Environment Code Section 206). Departments are advised to first consult the Department of the Environment to find alternative, complying products that do not require a waiver. Contact the City Toxics Reduction Program at 415-355-3700, or email inquiries to environment@sfgov.org, "ATTN: City Toxics".

Waiver requests must be submitted on a form to be designated by the City Purchaser, and the City Purchaser must respond to waiver requests within 5 business days. Electronic submission is preferred. In general, waivers may be granted when the submitting department determines that no product on the Approved Alternatives List meets its performance standards, when the product's cost is prohibitive, or for other reasons deemed acceptable by the Purchaser (see Environment Code §206 for acceptable waiver criteria). A Department may grant itself a waiver only for emergency conditions that meet the criteria set forth in section 21.15(a) of the Administrative Code, and must follow up with written justification.

II. COMMON PRODUCTS

A. PRODUCTS COVERED IN THE FEDERAL CPG OTHER THAN PRINTING AND WRITING PAPER PRODUCTS (Formerly Environment Code §507)

1. "Comprehensive Procurement Guideline" or "CPG" means final guidelines, as periodically promulgated by the United States Environmental Protection Agency (U.S. EPA) and codified at 40 Code of Federal Regulations Part 247 as amended, which designate products that are or can be made with recovered materials as they apply to the procurement of items with recovered materials content.

2. As of June 15, 2005, final CPGs exist for:

   Construction Products including: building insulation products, carpet (polyester), carpet cushion, cement and concrete containing: coal fly ash, ground granulated blast furnace slag, cenospheres or silica fume; consolidated and reprocessed latex paint, floor tiles, flowable fill, laminated paperboard, modular threshold ramps, nonpressure pipe, patio blocks, railroad grade crossing surfaces, roofing materials, shower and restroom dividers/partitions, and structural fiberboard.

   Landscaping Products including: compost made from yard trimmings or food waste, garden and soaker hoses, hydraulic mulch, lawn and garden edging, plastic lumber landscaping timbers and posts, and fertilizers made from recovered organic materials.

   Nonpaper Office Products including: binders, clipboards, file folders, clip portfolios and presentation folders; office furniture, office recycling containers, office waste receptacles, plastic desktop accessories, plastic envelopes, plastic trash bags, printer ribbons, and toner cartridges.

Paper and Paper Products including: commercial/industrial sanitary tissue products, miscellaneous papers, newsprint, paperboard and packaging products, printing and writing papers.

Park and Recreation Products including: park benches and picnic tables, plastic fencing, playground equipment, playground surfaces, and running tracks.

Transportation Products including: channelizers, delineators, flexible delineators, parking stops, traffic barricades, and traffic cones.

Vehicular Products including: Engine coolants, rebuilt vehicular parts, re-refined lubricating oils, and retread tires.

Miscellaneous Products including: awards and plaques, bike racks, blasting grit, industrial drums, manual-grade strapping, mats, pallets, signage, and sorbents.

3. Any City department buying or contracting to buy products on the CPG list (section B.2. above), including departments having responsibility for drafting or reviewing construction specifications, must buy products that meet or exceed the recommendations published in the corresponding "Recovered Materials Advisory Notice" or "RMAN."

"RMANs" are information and recommendations periodically published and amended by the U.S. EPA, based on U.S. EPA's market research concerning the availability, quality, and price of products listed in the CPG. *The RMANs make up the Approved Alternatives List for the above products.* For the most up-to-date RMANs, see the appropriate product category at: http://www.epa.gov/epaoswer/non-hw/procure/products.htm.

This section does not apply to printing and writing paper products which are covered under Section 506 of the Environment Code. This section does not apply to City departments purchasing tires for use on passenger vehicles, police, fire, ambulance or other emergency vehicle used in the course of protecting the health and safety of the residents of the City.

4. The Director shall maintain and make copies of the current CPG and RMAN and supporting documents available.

5. Wherever possible, each City department that purchases or contracts to purchase paper products subject to this regulation shall purchase and contract to purchase paper products that are processed chlorine free. City departments are not required to procure paper products that are processed chlorine free under this Subsection in any of the following circumstances: (i) the product is not available in a reasonable period of time; (ii) the product would fail to meet reasonable performance standards; or (iii) the product is only available at an unreasonable price.

B. PRODUCTS NOT LISTED IN THE CPG (Formerly Environment Code §508)

1. Wherever possible, for products which are not included in the CPGs, the City shall procure for its use products containing the maximum amount of post-consumer material.

C. BATTERIES (Formerly Environment Code §512)

1. Definitions
   - (a) "Battery" means two or more connected cells that produce a direct current by converting chemical energy to electrical energy. For purposes of this regulation, "battery" does not include automotive batteries.
   - (b) "Battery charger" means a device that restores anew the active materials in a battery.
   - (c) "Battery pack" means multiple batteries joined together in a single housing.

2. A City department that purchases or contracts to purchase batteries or products that include or incorporate battery or battery packs, shall purchase and contract to purchase:
   - (a) only the following types of batteries and battery packs which are deemed to be on the Approved Alternatives List for batteries and battery packs
     - (i) Rechargeable alkaline batteries
     - (ii) Rechargeable nickel metal hydride (NiMH) batteries, or
     - (iii) Another rechargeable battery type identified by the Director pursuant to regulations adopted under Section 203(d) of the Environment Code.
   - (b) only from vendors that collect spent batteries and recycle them in accordance with applicable laws:

3. At the request of the City department, a vendor must submit written certification and documentation that collected spent batteries were recycled in accordance with applicable laws.

4. A City department that purchases or contracts to purchase battery chargers shall purchase and contract to purchase chargers that recharge Ni-MH batteries as well as other battery types.

5. Each department that purchases batteries must require in the contract that the products be accompanied by detailed recycling instructions and any batteries containing cadmium, mercury, lead, or other hazardous materials include a written explanation of the toxic hazards of these substances in the waste stream.

6. A City department that purchases or contracts to purchase products that include or incorporate battery packs shall purchase and contract to purchase such products in which the batteries are easily removable.

How Commodities are Purchased under San Francisco's Precautionary Purchasing Ordinance

[Using paint as an example]

PRIORITIZING PRODUCT CATEGORIES

1. Criteria for prioritizing product categories are developed by DOE and stakeholders.
2. DOE applies criteria to broad categories of products routinely purchased by the City, and selects highest priority categories ("Targeted Product Categories").
3. The Targeted Product Categories list is approved by the Commission on the Environment at a public hearing, and updated at least every three years.

PURCHASING PRODUCTS

4. (*Assume that paint is a Targeted Product Category*) DOE decides to begin work on paint contract.
5. DOE consults with stakeholders (including City painters) to develop product selection criteria, for example, "no reproductive toxins" or "greater than 50% recycled content."
6. DOE works with City purchasers to assemble bid documents. Two possible processes may be followed:
   A. Products are prescreened before bidding
      i. DOE issues data requests to product manufacturers (for detailed ingredients data and/or existing ecolabel certifications).
      ii. DOE screens products against product selection criteria, and assembles a list of complying products ("Approved Alternatives List").
      iii. Approved Alternatives list is presented at a public hearing. Bid documents are assembled using this list, with input from City painters.
      iv. Low bid is selected.
   B. Products are screened as part of the bid process
      i. Product selection criteria are included in the bid documents.
      ii. Bidders supply data and/or certifications requested.
      iii. Low bid is selected.
      iv. Resulting list of products becomes the Approved Alternatives List, and is presented at a public hearing.
7. If a department wants to purchase its own paint, it may only purchase products from the Approved Alternatives List.
8. If a department wants to buy paint that does not meet the City's environmental/health criteria, it can apply for a *waiver* from the City purchaser based on:
   i. Performance
   ii. Cost/availability
   iii. Other special issues (for example, compatibility with existing equipment)
9. After bid award, DOE and City purchasers collect information on product performance from City users in preparation for the next contract round. DOE also organizes trainings on new products as appropriate.

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: September 27, 2005 **ITEM NO. 9**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Climate Action Plan Update

☒ Climate Action Plan Executive Summary

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***This list reflects the explanatory documents provided.**

Department of the Environment, City and County of San Francisco
11 Grove Street, San Francisco, CA 94102
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Email: environment@sfgov.org • www.sfenvironment.com

100% Post-Consumer Content

Update on the Climate Action Plan to the Commission on Environment

New Developments

Establishment of Climate Action Coordinator in the Energy Division of the Department of the Environment

- Position filled by Melissa Capria, former Senior Program Officer for ICLEI on the Cities for Climate Protection (CCP) Campaign. Melissa's ICLEI work included technical assistance on the development of the SF Climate Action Plan. Start date was 9/19/05.
- Position reports directly to Cal Broomhead, Energy Programs Manager.
- Initial tasks include assessing opportunities available through membership in ICLEI, the California Climate Action Registry (CCAR) and the Chicago Climate Exchange (CCX).
- Core of the Climate Action Coordinator work plan is dedicated to implementation of the Climate Action Plan as well as updating the greenhouse gas emissions inventory.
- Additional tasks include tracking regional, state and national developments in climate policy, conducting meetings of the Climate Action Plan Working Group and processing a resolution by the Board of Supervisors to accept the Climate Action Plan.

Executive Order S-3-05 – establishing aggressive greenhouse gas reduction targets for the State of California (see: www.climatechange.ca.gov)

- Governor Schwarzenegger announced the Executive Order at World Environment Day in San Francisco on June 1, 2005.
- The long-term target is one of the most aggressive set anywhere:

Short term -	By 2010, Reduce to 2000 Emission Levels
Mid term -	By 2020, Reduce to 1990 Emission Levels
Long term -	**By 2050, Reduce to 80 percent Below 1990 Levels**

- The Secretary of CalEPA is leading a Climate Action Team made up of Secretaries of the Business, Transportation and Housing Agency, the Department of Food and Agriculture, the Resources Agency, the Chairperson of the Air Resources Board, the Chairperson of the Energy Commission and President of the Public Utilities Commission.
- Department of Environment staff has begun attending public meetings of the Climate Action Team. The Team will be presenting their first report to the Governor and Legislature on how to reach the State reduction targets in January 2006.

Next Steps:

Full implementation of the Climate Action plan will require coordination between the Departments that are responsible for reducing emissions from municipal operations (primarily buildings, fleet, water/sewage, outdoor lighting and traffic signals, and waste generated by municipal operations) with the Department of Environment as the lead agency. To achieve the level of coordination necessary to achieve San Francisco's emissions reduction goals the Department of Environment will set up an interdepartmental working group.

These Departments are also responsible for providing the data necessary to track emissions to the Department of Environment. The level of reporting required by regimes such as the CCAR and CCX is more rigorous than San Francisco's current greenhouse gas emission tracking. In order to meet the rigorous reporting requirements it will be important to have high level support to dedicate staff time to these activities in the relevant Departments.

Executive Summary

Global Warming is real. The world's leading climate scientists agree that human behavior is accelerating global warming, and that the earth is already suffering the impacts of the resulting climate change.

Climate change will affect San Francisco. It is a global problem with local impacts. Rising temperatures, rising sea level, and more frequent El Niño storms could seriously threaten the City's infrastructure, economy, health, and ecosystems with impacts such as:

- Flooded roads, threats to the sewage system and Airport infrastructure
- Increased asthma and respiratory illness due to higher ozone levels
- Threatened Bay wetlands and marine life
- Fishing and tourism industry impacts, high insurance and mitigation costs

We have a responsibility to act. San Francisco is responsible for about 9.7 million tons of CO_2 emissions per year. In 2002, the San Francisco Board of Supervisors passed the *Greenhouse Gas Emissions Reduction Resolution*, committing the City and County of San Francisco to a greenhouse gas emissions reductions goal of 20% below 1990 levels by the year 2012. The resolution also states that the Mayor and Board of Supervisors actively support the Kyoto Protocol, and calls upon national leaders to do so as well. Federal inaction makes state and local action all the more important. The development of this *Climate Action Plan*, called for in the resolution, describes what San Francisco can do in order to achieve our greenhouse gas reduction goal.

San Francisco has joined with over 500 cities around the world to participate in the *Cities for Climate Protection* (CCP) campaign, sponsored by the International Council for Local Environmental Initiatives (ICLEI). As part of the campaign, member cities have committed to: inventory their emissions of greenhouse gases; set reduction targets; develop comprehensive strategies to meet these targets; implement these emissions reduction actions; and measure the results. The criteria set by the CCP campaign have been used to define the scope and presentation of this Plan.

The *Climate Action Plan*

- Provides background information on the causes of climate change and projections of its impacts on California and San Francisco from recent scientific reports;
- Presents estimates of San Francisco's baseline greenhouse gas emissions inventory and reduction target;
- Describes recommended emissions reduction actions in the key target sectors - transportation, energy efficiency, renewable energy, and solid waste management – to meet our 2012 goal; and
- Presents next steps required over the near term to implement the Plan.

Climate Change: Causes and Impacts

Climate change is both a global and local phenomenon. The Intergovernmental Panel on Climate Change (IPCC), reports that temperatures and sea level are rising at the fastest rate in history, and are projected to continue rising (2-10 degrees Fahrenheit temperature rise, 4-36 inches sea-level rise over the next 100 years). This trend, sometimes referred to as "global warming," is seriously impacting water resources, ecosystems, human health, and the economy.

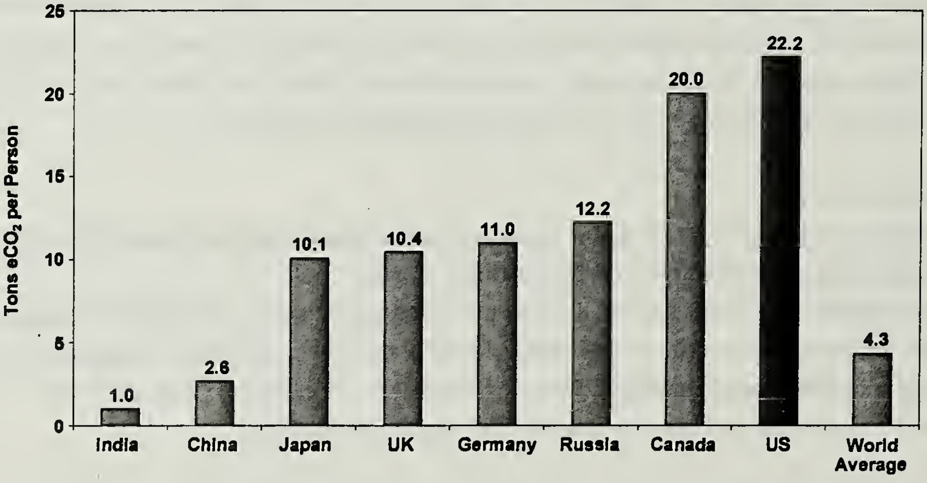
Human and Cultural Causes of Climate Change

Human behavior is accelerating climate change. The release into the atmosphere of carbon dioxide (CO_2) from the burning of fossil fuels in power plants, buildings and vehicles, the loss of carbon "sinks" due to deforestation, and methane emitting from landfills are the chief human causes of climate change. These emissions are referred to collectively as "greenhouse gases" (ghgs).

The United States has the highest per capita emissions of ghgs in the world–22 tons of CO_2 per person per year (see figure ES.1). With only five percent of the world's population, the United States is responsible for 24 percent of the world's CO_2 emissions.

California, despite its strong environmental regulations, is the second largest greenhouse-gas polluting state in the nation, and emits 2% of global human-generated emissions. Its largest contribution of CO_2 is from vehicle emissions. Clearly, more needs to be done. California has much to lose if climate change is not abated.

Figure ES.1 - Per Capita CO_2 Emissions 2001



Sources: Energy Information Administration: World Carbon Dioxide Emissions from the Consumption and Flaring of Fossil Fuels, 1992-2001, U.S. Census Bureau: Countries Ranked by Population: 2001

Impacts on San Francisco

San Francisco, as a coastal city surrounded on three sides by water, is extremely vulnerable to climate change. It is further at risk because the City depends on the Sierra snow pack for its water supply and for hydroelectric power. According to a joint study by the Union of Concerned Scientists and Ecological Society of America, some of the possible effects of climate change on San Francisco are:

- Sea-level rise may threaten coastal wetlands, infrastructure, and property.
- Increased storm activity together with sea-level rise could increase beach erosion and cliff undercutting.
- Warmer temperatures and more frequent storms due to El Niño will bring more rain instead of snow to the Sierras, reducing supply of water for summer needs.
- Decreased summer runoff and warming ocean temperatures will affect salinity, water circulation, and nutrients in the Bay, possibly leading to complex changes in marine life.

Such dramatic changes to San Francisco's physical landscape and ecosystem will be accompanied by financial and social impacts. Tourism would suffer, as would San Francisco's fishing industry and the regional agricultural industry, which is expected to be greatly disrupted by a warmer climate. Food costs would rise, property damage would be more prevalent, and insurance rates would increase accordingly.

The City's roads, pipelines, transportation, underground cables and sewage systems could be severely stressed or overwhelmed if rare instances of flooding or storm damage become common occurrences. Low lying areas such as San Francisco International Airport, built on a wetland, would be at high risk in the face of a rising sea level.

The environment plays a large role in some diseases carried by insects. Warming could make tick-borne Lyme disease more prevalent and could expand the range of mosquito-borne diseases such as West Nile virus. Another threat to the health of San Francisco residents is air pollution caused by higher temperatures and increased ozone levels. Neighborhoods in the Southeast of the City, where asthma and respiratory illness are already at high levels, would be especially at risk.

Existing Mandates to Curb Climate Change

The United Nations Framework Convention on Climate Change (UNFCC) process is comprised of 150 participating countries. As of June 2003, 110 countries had ratified the Kyoto Protocol, agreeing to targets and timelines for reducing their greenhouse gas emissions. The United States signed, but has not ratified the protocol.

California has set specific targets for reducing greenhouse gas emissions produced in the state.

- Senate Bill 1078 (Sher, 2002) set a Renewable Portfolio Standard (RPS) which requires electricity providers to increase purchases of renewable energy resources by 1% per year until they have attained a portfolio of 20% renewable resources.

- Assembly Bill 1493 (Pavley, 2002) requires the California Air Resources Board to develop regulations mandating vehicle tailpipe CO_2 emissions reductions.
- Senate Bill 1771 (Sher, 2000) established the California Climate Action Registry to serve as a certifying agency for companies and local governments to quantify and register their greenhouse gas emissions for possible future trading systems.

San Francisco's Greenhouse Gas Emissions: Inventory and Reduction Target

San Francisco's greenhouse gas emissions come principally from the CO_2 produced from the burning of fossil fuels in vehicles, in buildings, and in power plants. Methane, another major greenhouse gas, is released from the landfill used by the City for solid waste disposal.

Inventory

The first step in developing the *Climate Action Plan* was to conduct a baseline inventory of greenhouse gas emissions. The emissions inventory identifies and categorizes the major sources and quantities of ghg emissions being produced by City residents, businesses, and municipal operations.

In 1990, San Francisco's total ghg emissions were approximately **9.1 million tons eCO_2** (equivalent carbon dioxide).[1] Figure ES.2 shows the breakdown of these emissions from all sources for the 1990 baseline year. "Building Energy" includes the impacts of the electricity and natural gas used in both private and public sector buildings and facilities. "Transportation" includes emissions from in-City and intraregional personal and commercial vehicles, Muni, BART, and other transit as well as the City's municipal fleet.

Reduction Target

San Francisco's reduction target is 20% below 1990 levels by 2012. This is about **2.5 million tons** below 2000 levels. Figure ES.3 shows estimated emissions levels for the baseline year (1990), 2000 levels, forecast levels (2012), and San Francisco's 2012 target compared to the Kyoto Protocol and IPCC targets.

With "business as usual," greenhouse gas emissions are predicted to rise to 10.8 million tons per year in 2012. The 20% reduction target would reduce San Francisco's overall ghg emissions to **7.2 million tons per year by 2012.**

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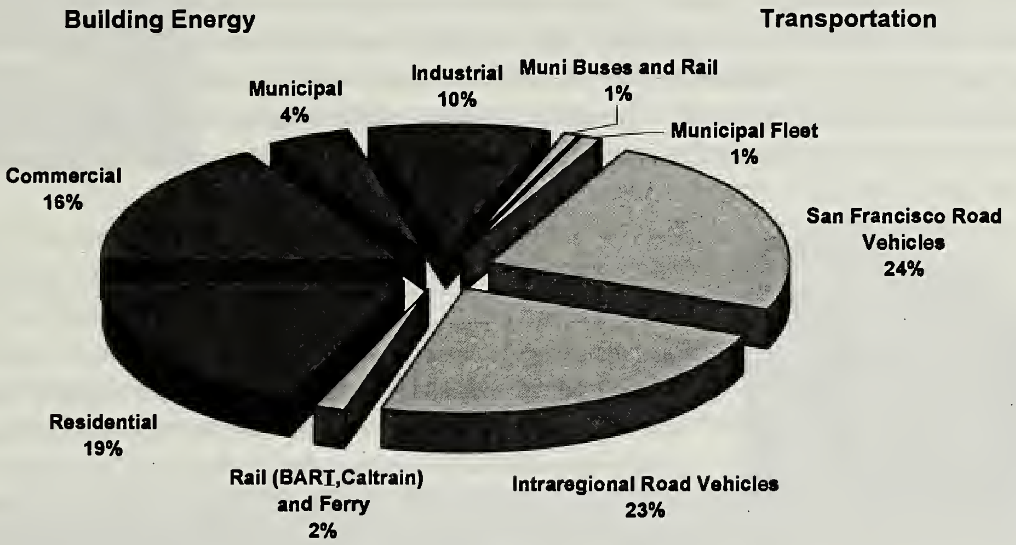
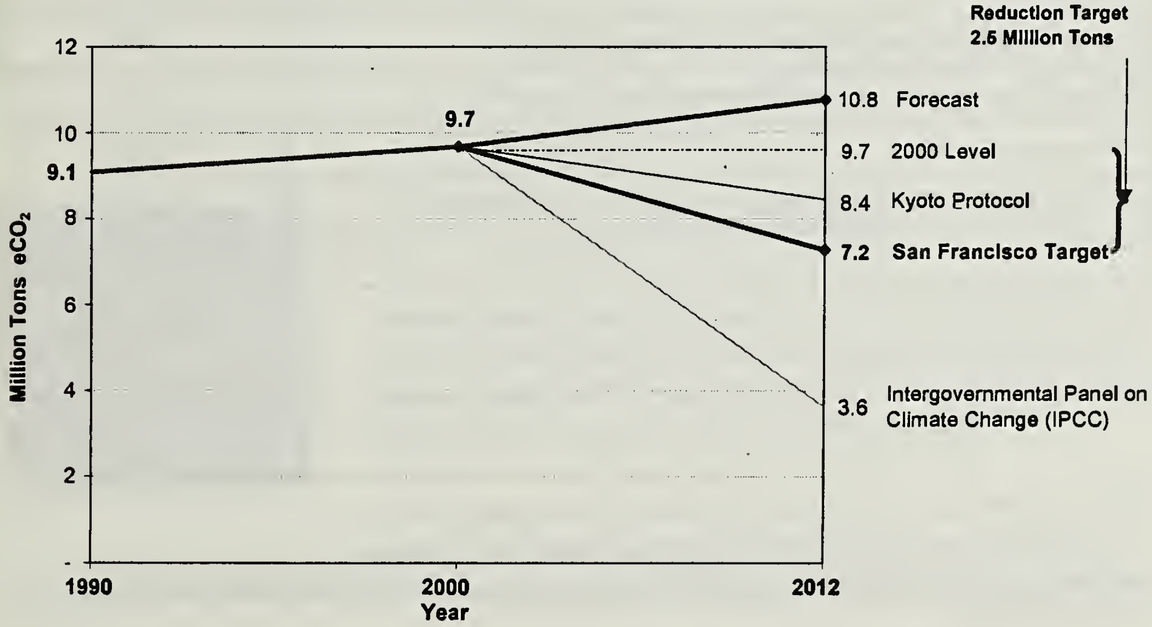
[1] All of the contributors to greenhouse gas emissions (e.g. electricity in kilowatt-hours x an electricity coefficient, natural gas in therms, vehicle travel in gallons of fuel, solid waste in tons x material coefficients) are combined and expressed here in the common unit of tons of "equivalent carbon dioxide" (eCO_2) released into the atmosphere in a given year.

Figure ES.2 - San Francisco Greenhouse Gas Emissions (eCO_2), 1990



1990 Baseline Greenhouse Gas Emissions. Total = 9.1 million tons eCO_2 per year
Source: PG&E, Hetch Hetchy Water and Power, CA. Dept. of Transportation, MTC, Muni, BART

Figure ES.3 - San Francisco Greenhouse Gas Emissions Forecast and Targets



Taking Action to Reduce Emissions

While San Francisco has been actively pursuing cleaner energy, transportation, and solid waste policies, it is clear that we need to do more to reduce the rate of ghg emissions. In order to meet our reduction goal, this Plan sets forth a comprehensive set of actions that should be set in motion immediately. The actions are organized into four categories—Transportation, Energy Efficiency, Renewable Energy, and Solid Waste. The estimated annual 2012 emissions reduction levels are listed for each set of actions below.

Transportation

The major ways to reduce transportation sector ghg emissions are by reducing vehicle trips and by traveling in vehicles with lower emissions. Reducing trips can be done by encouraging a shift from driving to alternative modes such as public transit, ridesharing, bicycling and walking. This would be accomplished through improved services and financial incentives. Vehicle emissions can be reduced by switching to more fuel-efficient or cleaner-fueled vehicles, and by downsizing fleets.

Transportation Action Categories	Estimated CO_2 Reduction (tons/year)
A. Increase the Use of Public Transit as an Alternative to Driving	87,000
B. Increase the Use of Ridesharing as an Alternative to Single Occupancy Driving	42,000
C. Increase Bicycling and Walking as an Alternative to Driving	10,000
D. Support Trip Reduction Through Employer-Based Programs	28,000
E. Discourage Driving	155,000
F. Increase the Use of Clean Air Vehicles and Improve Fleet Efficiency[2]	641,000
Total	**963,000**

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[2] 555,000 tons of this reduction would be a result of a 5 miles per gallon increase in Federal CAFÉ (Corporate Average Fuel Efficiency) standards.

Energy Efficiency

Reducing energy use reduces ghg emissions from fossil fuels burned in power plants and in buildings. Offering incentives on select products can encourage consumers to invest in efficient appliances or in home improvements that lower energy use. Other methods to increase energy efficiency include providing technical assistance and energy management services such as energy audits and design assistance for residential, commercial and municipal buildings. Education and outreach programs need to broaden general public awareness and to train particular groups (such as designers and building contractors) on energy efficiency practices.

The City has the power to strengthen energy codes and standards for both existing buildings and new construction that would bring both immediate and long-term benefits in terms of financial savings to businesses and residents.

Energy Efficiency Action Categories	Estimated CO_2 Reduction (tons/year)
A. Increase Incentives, Direct Installation and Technical Assistance	
Residential Buildings	222,000
Commercial Buildings	433,000
Municipal Buildings	45,000
B. Expand Education and Outreach	36,000
C. Strengthen Legislation, Codes and Standards	65,000
Total	**801,000**

Renewable Energy

Renewable energy technologies such as solar, wind, and biomass are now available, reliable and often cost-effective alternatives to fossil fuels for producing electricity. Emerging technologies such as fuel cells and tidal power should be researched and pilot projects developed.

Increasing the amount of renewable sources ("green power") in the City's electricity mix through local projects as well as through the State's electricity grid can have a great impact on greenhouse gas emissions and should be an ongoing action item.

Renewable Energy Action Categories	Estimated CO_2 Reduction (tons/year)
A. Develop Renewable Energy Projects	
Solar Energy	35,000
Wind Energy	239,000
Biomass Energy	44,000
B. Conduct Pilot Projects for Emerging Technologies[3]	–
C. Support and Develop Green Power Purchasing	230,000
Total	**548,000**

Solid Waste

Recycling reduces CO_2 emissions by avoiding the energy used during the extraction and processing of virgin raw materials to manufacture new products. Also, reducing landfill reduces the amount of methane–a potent greenhouse gas–released into the atmosphere.

Actions should include expanding recycling and composting programs, to include more sectors of the city; encouraging recycling of construction and demolition debris; and increasing recycling in City departments.

Solid Waste Action Categories	Estimated CO_2 Reduction (tons/year)
A. Increase Residential Recycling and Composting	70,000
B. Increase Commercial Recycling and Composting	109,000
C. Expand Construction and Demolition Debris Recycling	57,000
D. Support Alternate Collection Methods for Recyclable Materials	66,000
E. Promote Source Reduction, Reuse and Other Waste Reduction[4]	–
F. Expand Municipal Programs[5]	–
Total	**302,000**

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[3] Research and Development projects.
[4] Unknown materials breakdown. Savings not estimated.
[5] Included under B. Increase Commercial Recycling and Composting.

Implementing the Plan

Actions Summary	Estimated CO_2 Reduction
Transportation Actions	963,000
Energy Efficiency Actions	801,000
Renewable Energy Actions	548,000
Solid Waste Actions	302,000
Total	**2,614,000 tons/year**

Our current level of activity will find us 20% above 1990 levels or 3.6 million tons short of our stated ghg emissions goal for 2012. If we are to reach our reduction target of approximately 2.5 million tons of CO_2 per year by the year 2012, it is imperative that over the next 1-3 years we act to:

- Accelerate and expand existing programs in all areas—transportation, energy efficiency, renewable energy, and solid waste.
- Develop the infrastructure to support new programs.
- Secure resources to implement actions.
- Set up tracking mechanisms and indicators to measure progress.

The City should set up a process to support City departments and private entities to integrate climate protection into their standard operating procedures. To be successful, this process must include participation of stakeholder groups and implementing agencies. As the coordinating agency, the Department of Environment (SF Environment) should:

- Establish a City interdepartmental working group and an external advisory group to implement the Plan.
- Establish and maintain a tracking system for quantifying CO_2 emissions and reductions.
- Collaborate with other cities through ICLEI's Cities for Climate Protection program.
- Increase outreach and education activities (such as publishing brochures on "simple things you can do" for climate protection).
- Investigate emissions credit trading systems.
- Seek grant funding from sources such as the US Department of Energy, US Environmental Protection Agency (EPA), and California Energy Commission (CEC).
- Document and report progress to decision makers and to the public.

While confronting global warming may seem insurmountable, local action can make a difference. It is imperative that San Francisco, a city at high risk from climate change impacts, takes action now to slow its effects. This can only be accomplished by a clear understanding of why climate change is occurring; conscious actions by City leaders and citizens to reduce local sources that are contributing factors; and concerted efforts to increase awareness and encourage action locally and at the state, national, and international levels.

Cost-effective solutions to reduce greenhouse gas emissions are available today. However, in order for these solutions to realize their potential, we must make climate protection a priority in our policies, budgets and investments, and personal and organizational actions.

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: September 27, 2005 **ITEM NO. 12**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Notice of Proposed Amendment to Commission Bylaws

☒ Draft Resolution Amending Bylaws

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***This list reflects the explanatory documents provided.**

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

NOTICE OF PROPOSED AMENDMENT TO THE BYLAWS OF
THE SAN FRANCISCO COMMISSION ON THE ENVIRONMENT
TO BE ACTED UPON AT THE MEETING OF SEPTEMBER 27, 2005.

This notice is issued pursuant to Article XI – Amendment of Bylaws of the Bylaws of the San Francisco Commission on the Environment requiring circulation of proposed amendments in writing to all Commissioners and noticed to the public at least ten (10) days prior to such meeting.

The following provision in Article VII – Committees, Section 8: Hydrogen and Renewable Energy Committee is proposed for amendment as follows:

~~The Hydrogen and Renewable Energy Committee shall meet on the 1st Wednesday of February, April, June, August, October, and December at 4:00 p.m. in room 421 City halls, 1 Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco.~~

Replace with the following schedule/bylaws change as follows:

The Hydrogen and Renewable Energy Committee shall meet on the fourth Wednesday of February, April, June, August, October, and December at 5:00 p.m. in Room 421, City Hall, One Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco.

This is to certify that the above notice was issued on Tuesday, August 30, 2005.

Monica Fish

Monica Fish, Commission Secretary

11 Grove Street, San Francisco, California 94102
www.sfenvironment.com
Telephone (415) 355-3709 Fax 554-6393 E-mail: MonicaFish@sfgov.org

FILE NO. R-2005-04-COE

RESOLUTION NO.
September 27, 2005

[Amendment of Commission on the Environment Bylaws.]

Resolution amending the Commission on the Environment's Bylaws to change the Commission's Hydrogen and Renewable Energy Meeting Committee's regular meeting schedule.

WHEREAS, The Commission on the Environment wishes to revise its Bylaws to change the Commission's Hydrogen and Renewable Energy Meeting Committee's regular meeting schedule; now, therefore, be it

RESOLVED, the Bylaws are amended to read as follows:

Article VII – Committees, Section 8: Hydrogen and Renewable Energy Committee

The Hydrogen and Renewable Energy Committee shall meet on the fourth Wednesday of February, April, June, August, October, and December at 5:00 p.m. in Room 421, City Hall, One Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Committee will work toward a plan for 100% renewable energy for the city's electricity and transportation fuels in less than 25 years. The Committee will focus on the potential role of hydrogen (from water & renewable energy), tidal power and other innovative ideas.

This information shall be posted on the Department of the Environment's website.

I hereby certify that this Resolution was ___________ at the Commission on the Environment's Meeting on September 27, 2005.

____
Monica Fish, Council Secretary

VOTE:

Ayes: Members

Noes: Members

Absent: Members

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: September 27, 2005

ITEM NO. 15

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Commission Secretary Report

☒ Correspondence from SF Refuse Ratepayer Advocate

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***This list reflects the explanatory documents provided.**

SF Environment
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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEMORANDUM

DATE: September 27, 2005

TO: Commission on the Environment

FROM: Monica Fish, Commission Secretary

RE: Commission Secretary Report September 27, 2005

COMMUNICATIONS AND CORREPONDENCE

Correspondence (letter of introduction) dated September 15, 2005 from Linda Eggerth, San Francisco Refuse Ratepayer Advocate has been sent to the Commission by email (on September 15) and a copy is enclosed in the Commission packet.

PENDING CITY LEGISLATION

Urban Forest Council: The following two Ordinances were heard by the City Operations and Neighborhood Services Committee on Monday, September 19, 2005:

050689 **[Public Works Code - significant trees, landmark trees, and penalties for violations]** **Supervisor Daly**

Ordinance amending the Public Works Code by amending Sections 802, 804, 807, and 808 and adding Section 810A to address removal, maintenance, and nomination of significant trees as defined herein; amending Sections 802, 806, and 809 to redefine nuisance trees as hazard trees; amending Sections 802 and 803 authorizing the Urban Forestry Council to succeed to the powers and duties of the Tree Advisory Board; amending Section 810 to allow the City to landmark any tree within its territorial limits; amending Section 811 to create civil penalties and fines and to modify provisions on administrative penalties; and making environmental findings.

Department of the Environment, City and County of San Francisco
11 Grove Street, San Francisco, CA 94102
Telephone: (415) 355-3700 • Fax: (415) 554-6393
Email: environment@sfgov.org • www.sfenvironment.com
100% Post-Consumer Content

051458 **[Public Works Code - landmark trees and penalties for violations]** **Supervisor McGoldrick**

Ordinance amending the Public Works Code by amending Section 802 to modify various definitions; amending Sections 802, 806, and 809 to redefine nuisance trees as hazard trees; amending Sections 802 and 803 authorizing the Urban Forestry Council to succeed to the powers and duties of the Tree Advisory Board; amending Sections 804, 807, 808, and 810 concerning landmark trees and procedures to designate, nominate, and remove landmark trees; amending Section 811 to create civil penalties and fines and to modify provisions on administrative penalties; and making environmental findings.

The Committee voted to (1) forward with recommendation to approve File 051458 legislation to the full Board of Supervisors for consideration at their meeting on October 11, 2005; (2) forward with recommendation not to approve File 050689 legislation to the full Board of Supervisors for consideration at their meeting on October 11, 2005.

Alexis Harte, Urban Forest Coordinator has provided the Commission with a summary of both sets of legislation as follows:

Significant Tree Ordinance (Daly)

Requires Department of Public Works (DPW) permit, inspection and notification to remove **significant or landmark** trees on public and private property. Hazardous trees can be removed.

Landmark tree nomination

*UFC creates criteria; DPW Director approves criteria
*Criteria includes size, age, species, appearance, historical value, ecological value, location
*No description of how someone nominates a tree
*Board of Supervisors (BOS) approves tree nominations

Landmark tree removal

*BOS holds public hearing prior to tree removal
*BOS approves tree removal

Significant trees

Diameter at breast height (DBH) > 12 inches
Height > 20 feet
Canopy > 15 feet

Emergency tree removal

No information

Cost

People who want to designate or remove a landmark tree must pay costs related to a BOS hearing.

Penalties and Fines

- First violation is $200
- Maximum fine is $1000
- Maximum sentence is 6 months in SF County jail
- DPW Director can fine for tree's replacement value or diminishment of value based on CTLA guidelines

Hazard tree amendment

Nuisance trees are redefined as hazard trees in public works code

Tree Advisory Board amendment

Urban Forest Council (UFC) assumes the duties of the defunct Tree Advisory Board

Landmark Tree Ordinance (McGoldrick)

Requires DPW permit, inspection and public notification to remove **landmark** trees on public and private property. Hazardous trees can be removed.

Landmark tree nomination

*UFC creates criteria; UFC and Director of DPW adopt criteria
*UFC has a larger role in advising DPW and Zoning Administrator
*UFC accepts and approves written tree nominations
*BOS designates landmark trees based on UFC and Director of DPW recommendations

Landmark tree removal

*Director of DPW holds initial hearing. BOS will hold hearing for if DPW decision is appealed.
*For trees on city property BOS will consider size, age, species, appearance, historical value, ecological value, location

*BOS approves tree removal

Emergency tree removal

Private property tree removal: Public Director of DPW issues immediate tree removal and then explains rationale to city agencies, BOS, public
City owned tree removal: Removal is subject to current city agency rules and historical/cultural status

Cost

People who want to designate a landmark tree must pay costs related to UFC hearing (nominal?). People who want to remove a landmark tree must pay costs related to DPW and BOS hearing.

Penalties and fines

Same

Hazard tree amendment

Same

Tree Advisory Board

Same

SF
Refuse Ratepayer Advocate

Linda L. Eggerth, PO Box 421398, San Francisco, CA 94142
Toll-free: 866-848-3337, Email: Linda@SFRefuseRatepayerAdvocate.com

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September 15, 2005

Re: San Francisco Refuse Ratepayer Advocate

The purpose of this letter is twofold. First, I would like to introduce myself to those of you that I have not already met – my name is Linda Eggerth and I am the San Francisco Refuse Ratepayer Advocate, a newly created position to assist the public. Second, I would like to invite you to participate in the upcoming garbage rate setting process.

Residential garbage service in San Francisco is provided by Sunset Scavenger Company and Golden Gate Disposal & Recycling Company, subsidiaries to Norcal Waste Systems, Inc. Rates that Norcal charges to residents of San Francisco must be approved by the City, and Norcal is required to submit a rate application to the City in order to change the rates it charges. The application is analyzed by City staff and consultants, and a series of public workshops and hearings are held.

The first public workshop was held on September 9. Representatives from the City described the rate adjustment process, focusing on the ways in which the process has been changed to encourage ratepayer involvement. (The position of Refuse Ratepayer Advocate has been established to facilitate participation and to ensure that San Francisco ratepayers are fairly represented.) Members of Norcal presented an overview of the services that the company provides in San Francisco, and then discussed generally the rate adjustment process that is being prepared, focusing mainly on program enhancements and changes to the methods that residential rates will be calculated. A draft of the rate application will be submitted by Norcal on October 11.

I encourage you to become involved in the garbage rate adjustment process by taking the following steps:

1. Join the mailing list to receive future notices and updates (see box below).
2. Contact me with any questions or comments that you may have.
3. Regularly check the Advocate website for updates (www.SFRefuseRatepayerAdvocate.com).
4. Attend the next public workshop on November 4 (1:00 to 4:00 pm at City Hall).

I look forward to hearing from you and working with you on this important process.

Regards,

Linda

Linda Eggerth

☐ **Yes, I am interested in receiving future notices and updates.**
Please return this page by mail, or provide the information by email or telephone (toll-free). Be sure to update your contact information above (if needed) and, if possible, provide an email address for future notices (to reduce the use of paper resources).

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Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO
COMMISSION ON THE ENVIRONMENT
REGULAR MEETING
DRAFT MINUTES

SF
E83
#2
9/27/05
draft

Tuesday, September 27, 2005, 5:00 P.M.
City Hall, Room 416
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

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COMMISSION MEMBERS: Commissioners Nia Crowder (President); Paul Pelosi Jr. (Vice President); Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

   The meeting was called to order at 5:10 p.m. Present: Commissioners Crowder, Pelosi Jr., King, and Mok. Excused: Commissioners Desser, Rodriguez, and Wald.

2. **ACTION:** Adoption of Minutes of the July 26, 2005 Meeting.

   No public comment was heard at this time. Upon motion by Commissioner Pelosi Jr., the July 26, 2005 Regular Meeting Minutes were approved by the following vote:

   VOTE: Approved (4-0) (3 Absent)
   AYES: Commissioners Crowder, Pelosi Jr., King and Mok
   NOES: None
   ABSENT: Commissioners Desser, Rodriguez, and Wald

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. There were no public comments at this time.

4. **INFORMATIONAL PRESENTATION:** Waste Characterization Study: Analysis of what is left in San Francisco's waste stream (Explanatory Document: Waste Characterization Study August 2005 (PDF)).
   SPONSOR: Jared Blumenfeld, Director
   SPEAKER: Dan Sicular, Senior Project Manager, Environmental Science Associates

   Mr. Sicular gave a presentation on the results of the Waste Characterization Study that Environmental Science Associates performed to characterize the materials in San Francisco's landfill waste through various waste streams. Main topics discussed included:

   - Consultant team retained to perform the work;
   - Waste stream sampling produced in San Francisco consisting of hand sorted samples and visual characterizations of loads from various sources. All samples studied were disposed through Norcal Waste Systems and destined for landfill;
   - Materials landfilled through Norcal for 2003-2004 and top six materials San Francisco sends to landfill waste;
   - Summary composition of all material by categories, composition comparison of landfilled materials, and composition comparison of landfilled materials from Fantastic 3 Program by single family, multi-family and commercial governmental institutional sources;
   - Landfilled compostable food and all landfilled compostable material;
   - Landfilled recyclable paper and all landfilled recyclables;
   - Detail of landfilled recyclable paper (type of paper) and of landfilled recyclables other than paper (plastic, glass, metal, C&D);
   - Comparison of 1996 and 2005 waste composition of five recoverable materials (food, cardboard, newspaper, glass containers, plastic containers).

5. **INFORMATIONAL PRESENTATION:** Toxicity Profile: Study on toxicity in waste stream (Explanatory Document: Toxicity Profile of Disposed Waste Generated Within San Francisco (PDF)).
   SPONSOR: Jared Blumenfeld, Director
   SPEAKER: George Savage, Executive Vice President, CalRecovery Inc.

   Mr. Savage gave a presentation on the toxicity profile of the waste stream that goes to landfill. The project objective is to determine toxicity of disposed wastes and methods to reduce the toxicity. The five major methodology steps applied to this project were discussed as follows:

   1. Define quantities and characteristics of waste types (a list of approximately 40 different materials) and analyze potential hazardous materials in samples;

   2. Identify typical chemical compounds in or hazards represented by non-regulated hazardous wastes (NHW);

3. Identify key hazard characteristics of NHW wastes;
4. Determine which NHW represent the greater risks based on quantities and characteristics and severity of risk;
5. Determine which NHW represent the greater risks based on whether the risks are those to workers, the public, or the environment.

A discussion was held on the NHW categories used in the toxicity profiling analysis, hazard characteristics used in the analysis, and composition of NHW in disposed waste. Future work will consist of identifying what NHWs are the most dangerous, how risks can be reduced, and how the City can monitor the toxicity of the disposed waste stream and the effectiveness of management programs.

6. **INFORMATIONAL PRESENTATION:** Biodiesel and City Departments.
SPONSOR: Jared Blumenfeld, Director
SPEAKER: Kevin Drew, Residential Recycling Coordinator

Mr. Drew discussed the benefits of and community support for biodiesel, a renewable engine fuel made from any natural plant oil or animal fat, including recycled vegetable oil as described in the "Biodiesel presentation-San Francisco Commission on the Environment-September 27, 2005; Benefits of Biodiesel" handout distributed at the Commission meeting. Several benefits discussed included the reduction in particulate matter and carcinogens, fuel security for disaster preparedness, federal incentives, local job creation, and stabile non-toxic nonflammable fuel as well as many other benefits.

Public comment from Mr. Eric Bowen, President, San Francisco Biofuels Cooperative encouraging the Commission to consider San Francisco biodiesel needs and to take action to support two initiatives currently underway that (1) is working toward getting biodiesel use in San Francisco fleets and (2) another to help remove barriers to biodiesel use for private vehicles in San Francisco.

Public comment from Mr. Michael Ferry, San Francisco Fire Department on initiating a biodiesel pilot program in the Fire Department in January or February located in Battalion 10, Bayview/Hunter's Point District. President Crowder asked for an update after initiation of the program.

Public comment from Mr. Ben Jordan, Civil Engineer thanking the Commission for their work and spoke in support of biodiesel programs in San Francisco. Discussed Biofuel Recycling, a nonprofit organization that is working on developing ecological ways to collect vegetable oil from residents and restaurants to be used in local fleets and vehicles.

Public comment from Mr. Adam Hagen, President, Eureka Valley Neighborhood Association to encourage the Commission to consider the use of biodiesel for City vehicles and the public as well as supporting tax-incentives for using biodiesel.

7. **DISCUSSION and POSSIBLE ACTION:** Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses (Board of Supervisors File No. 050922). Commission may vote on a Resolution supporting the legislation (Explanatory Documents: Board of

Supervisors Ordinance File No. 050922 Introduced May 24, 2005 (PDF) and Draft Resolution Supporting Legislation (Word)).

SPONSOR: Commissioner Nia Crowder
SPEAKER: Jared Blumenfeld, Director

Director Blumenfeld described the amendment to the Payroll Tax Ordinance to establish exclusion for qualified renewable energy businesses. The Ordinance will be heard at the Board of Supervisors Budget and Finance Committee on Thursday, September 29, 2005. He advised the Commission that the Department is working on a holistic clean-tech initiative, and that the Mayor will be announcing new developments around the initiative.

Public comment from Mr. Eric Bowen requesting the Commission's support of the amendment to the Payroll Tax Ordinance.

Upon Motion by Commissioner Pelosi Jr. and second by Commissioner Mok, the Commission Resolution File No. 2005-05-COE recommending support for Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses Ordinance was not adopted by the following vote:

VOTE: Not Adopted (3 AYES; 1 NOE) (3 Absent)
AYES: Commissioners Crowder, Mok, and Pelosi Jr.
NOES: Commissioner King
ABSENT: Commissioners Desser, Rodriguez and Wald

Commissioner King recommended that the Ordinance include a clause that all efforts be made to include a first-source hiring policy.

Upon Motion by Commissioner King and second by Commissioner Pelosi Jr., Resolution File No. 2005-05-COE recommending support for Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses Ordinance with an amendment to add a clause that all efforts be made to include a first-source hiring policy was adopted by the following vote:

VOTE: Adopted (4-0) (3 Absent)
AYES: Commissioners Crowder, King, Mok, and Pelosi Jr.
NOES: None
ABSENT: Commissioners Desser, Rodriguez and Wald

8. **INFORMATIONAL PRESENTATION:** Update on Environmentally Preferable Purchasing Program and Presentation of Public Participation Guidelines (Explanatory Documents: Department Regulations SFE2005-01-PPO and SFE2005-02-PPO and How Commodities are Purchased under San Francisco's Precautionary Purchasing Ordinance (PDF)).

SPONSOR: Jared Blumenfeld, Director
SPEAKERS: Chris Geiger, City Toxic Reduction Coordinator and
Deanna Simon, City Toxic Reduction Specialist Assistant

Mr. Geiger gave an update on implementation of the Environmentally Preferable Purchasing for Commodities Ordinance and a status report on janitorial chemicals contracts. He advised that the Director has signed two Regulations, one administrative and is required in the Ordinance, and the second is the Public Participation Guidelines. The next steps in Ordinance implementation will be to present targeted categories that will result from the Department's prioritization process and will be scheduled for the March 28, 2006 Commission meeting.

Ms. Deanna Simon discussed office supplies, lamps, and batteries contracts. She advised that City Departments would be buying only post-consumer paper products when available and that Office Depot has implemented an on-line ordering system blocking certain products. Developments were discussed as follows: City departments are now purchasing rechargeable batteries. The Department has conducted City-purchaser training sessions providing fact sheets for City departments, meeting with lamp and bulb vendors to discern which lamps are preferable, and working with the Public Utilities Commission (PUC) to develop fact sheets to improve what the City is buying for energy efficiency and mercury content.

9. **INFORMATIONAL REPORT:** Status Report on the Climate Action Plan (Explanatory Document: Update on the Climate Action Plan (Word) and Climate Action Plan Executive Summary (PDF)).

SPONSOR: Commissioner Nia Crowder
SPEAKERS: Cal Broomhead, Energy Manager and
Melissa Capria, Climate Action Coordinator

Director Blumenfeld introduced Melissa Capria, Climate Action Coordinator for the Department of the Environment. Ms. Capria discussed her background working with local governments and her initial tasks as the Climate Action Coordinator that are described in the "Update on the Climate Action Plan" explanatory document.

Commissioner King asked if work would be toward climate control citywide or regionally. Ms. Capria indicated that the first step would be to reduce the City's emissions and then the goal would be to reduce emissions community-wide.

President Crowder indicated that the Commission would be monitoring the intersection between City and State goals through the Hydrogen & Renewable Energy Committee.

10. **DISCUSSION and POSSIBLE ACTION:** Status Report on Treasure Island Development Authority (TIDA) Environmental Goals: Commission may consider requesting a joint public hearing between the Commission and TIDA on the Treasure Island Draft Sustainability Report.

SPONSOR: Commissioner Nia Crowder
SPEAKERS: Jared Blumenfeld, Director,
Jack Sylvan, Treasure Island Project Manager, Mayor's Office of Workforce & Economic Development-Base Reuse

Mr. Sylvan gave a status report on the Treasure Island Draft Sustainability Plan that was presented to the Citizens Advisory Board and the Treasure Island Development

Authority Board (TIDA). He advised the Commission that significant revisions would be made to the Land Use Plan as a response to public comment and hiring of a new development team. Changes to the Land Use Plan will have implications to the Sustainability, Infrastructure, and Transportation Plans. As a result, the Draft Sustainability Plan would be revised based on the land use planning process and public input received. The Term Sheet Forward Schedule will have an updated Sustainability Plan that will be a public process with input from the Department of the Environment and consultants. Mr. Sylvan advised that the Commission's comments should be addressed to him and the TIDA Board.

President Crowder indicated that a formal request would be made to have a joint meeting with the Commission on the Environment and the TIDA Board and asked to be included in the Term Sheets.

Public comment from Ms. Ruth Gravanis commending the Draft Sustainability Plan and recommended strengthening the Plan by (1) not making assumptions about transit hubs and (2) not making assumptions that everyone has an automobile. She urged the Commission to hold a public hearing to review the location of transit hubs. President Crowder stated that the Commission would be holding a future public hearing.

Public comment from Mr. Clayton Mansfield, Sierra Club encouraging the Commission to continue to provide input to TIDA to make a good plan better in order to make Treasure Island a better place to live and work.

11. **INFORMATIONAL REPORT:** Community Outreach and Report on the westbound portion of the Bay Bridge bike lane.
    SPONSOR: Commissioner Nia Crowder
    SPEAKER: Andy Thornley, Program Director, San Francisco Bike Coalition

Mr. Thornley gave an informational report on the benefits of a San Francisco-Oakland Bay Bridge west span pathway and asked the Commission for endorsement. He reported that the east span is being rebuilt and will be completed approximately 2012. It will contain a pedestrian bicycle maintenance side path to allow pedestrians, bicycles, and maintenance crews to traverse the east span of the bridge between Yerba Buena and West Oakland, but would not extend to Treasure Island whereas a west span pathway would.

He reported that a feasibility study was conducted five years ago and it established that it would be feasible and practical to attach a west span pathway. Endorsement has been secured from the Board of Supervisors and the Mayor, and a request has been made for the California State Legislature and/or the Metropolitan Transportation Commission to include funding for the west span transportation link. He asked the Commission to join the other endorsees and place this item on the next Commission meeting agenda as an action item supporting the west-span pathway.

Public comment from Ms. Ruth Gravanis urging the Commission to consider a Resolution to (1) urge the Treasure Island Development Authority to endorse a west span pathway and (2) to indicate that planning should begin now on how the west span pathway would be incorporated and integrated into the Bay Trail and the rest of transportation planning for Yerba Buena and Treasure Island.

12. **DISCUSSION and ACTION:** Proposed Amendment to the Bylaws of the San Francisco Commission on the Environment to amend the regular meeting date of the Hydrogen & Renewable Energy Committee (Explanatory Documents: Notice of Proposed Amendment to the Bylaws and Draft Resolution Amending Bylaws (Word)).

    Upon Motion by Commissioner Pelosi Jr. and second by Commissioner Mok, Resolution File No. R-2005-05-COE Amendment of Commission on the Environment Bylaws of the San Francisco Commission on the Environment to amend the regular meeting schedule of the Hydrogen & Renewable Energy Committee was adopted with an amendment to read as follows:

    > "Article VII – Committees, Section 8: Hydrogen and Renewable Energy Committee
    > The Hydrogen and Renewable Energy Committee shall meet on the fourth Wednesday of February, April, June, August, and October at 5:00 p.m. and the second Wednesday in December at 5:00 p.m. in Room 421, City Hall, One Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Committee will work toward a plan for 100% renewable energy for the city's electricity and transportation fuels in less than 25 years. The Committee will focus on the potential role of hydrogen (from water & renewable energy), tidal power and other innovative ideas. This information shall be posted on the Department of the Environment's website."

    VOTE: Adopted (4-0) (3 Absent)
    AYES: Commissioners Crowder, King, Mok, and Pelosi Jr.
    NOES: None
    ABSENT: Commissioners Desser, Rodriguez, and Wald

13. **DISCUSSION:** Interest in Commission Office. As stated in the Commission of the Environment Bylaws, Article IV – Officers, Section 3A: "At the regular Commission meeting held in September of each year, any Commissioner interested in running for office shall state publicly his or her interest and willingness to run for a specific office." Elections will be held at the November Regular Meeting.

    President Crowder indicated interest in the office of President and Commissioner Pelosi Jr. in the office of Vice President.

14. **INFORMATIONAL PRESENTATION and FUTURE ACTION:** San Francisco Environment proposed move from 11 Grove to 25 Van Ness. Specific focus on plans to retain Eco-Center and ensure that move is done in a cost effective manner. Vote on plan of action for move at the next Commission meeting. A meeting is to be scheduled for the October Finance and Operations Committee meeting.

    SPONSOR: Commissioner Paul Pelosi Jr.

David Assmann, Deputy Director discussed the Department's proposed move to the ground floor of 25 Van Ness Avenue, a City-owned building, and the opportunity for the Department to redesign and make it into a world class green-building facility and eco-center. He reported that the ground floor space is available in August 2006, and it is the Department's preference to move in January 2007 to allow for renovation time. The Department would have to raise approximately $1 million dollars over the next sixteen months to pay for renovation expenses. He reported that the Department has renegotiated with the present landlord at 11 Grove Street for a 33 percent reduction in rent for a one-year extension. This item will be continued to the November Commission meeting for further discussion and action.

15. **INFORMATION:** Commission Secretary's Report

Monica Fish, Commission Secretary. The Commission Secretary reported the following:

- Communications and Correspondence: A letter of introduction was received from Linda Eggerth, San Francisco Ratepayer Advocate dated September 15, 2005 and emailed to the Commission on the same date.

- Update on Pending City Legislation: Two Ordinances were heard by the Board of Supervisors City Operations and Neighborhood Services Committee on Monday, September 19, 2005—(1) Public Works Code-significant trees, landmark trees, and penalties for violations sponsored by Supervisor Daly (Committee voted to forward to the full Board with a recommendation not to approve), and (2) Public Works Code-landmark trees and penalties for violations sponsored by Supervisor McGoldrick (Committee voted to forward to the full Board with a recommendation for approval). Differences in the two Ordinances were outlined in the Commission Secretary's Report dated September 27, 2005.

16. **INFORMATION:** Hydrogen and Renewable Energy Committee Report
    - Chair's Report: President Crowder highlighted the August 29, 2005 meeting reporting that there was a review of wave and tidal projects, community choice aggregation, and an update on the Climate Action Team. She reviewed the agenda for the upcoming Meeting on October 26, 2005 requesting a status report on hydrogen fueling trailer usage and implementation of Prop I in regards to vehicle procurement from MUNI.

Item 22 was heard after Item 16.

22. **FUTURE AGENDA ITEMS:** Commission Crowder requested the following items be placed on the November Commission meeting agenda: Presentations by Marshall Foster, the Mayor's Director of Greening, and the Green Technical Manager on goals, oversight and projected short-term achievements, and (2) Rhode Island's activities on plastic bag recycling and collection and an update on the Department's efforts. First quarter agenda items: joint PUC and Environment Commission meeting on restoration of Hetch Hetchy, presentation from supporting and opposing sides.

17. **INFORMATION:** Operations Committee Report
    - Chair's Report: Commissioner Pelosi Jr. reviewed the agenda for the upcoming meeting on October 19, 2005 that will be rescheduled to October 17, 2005 at 4:00 p.m. Agenda items are as follows: review environmental justice programs and grant material to make sure that guidelines are being enforced and suggestions to grant applications are being followed. Commissioner Mok reported that Commissioners would be giving comments on the Strategic Plan at the October meeting.

18. **INFORMATION:** Policy Committee Report. No report was given at this time.

19. **INFORMATION:** Director's Report
    - Jared Blumenfeld, Director, Department of the Environment gave updates on San Francisco Environment administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division as explained in the Director's Monthly Report for August and September 2005. He announced that the Port voted to approve the Literacy for Environmental Justice lease for the Department's grant.

20. **INFORMATION**: President's Announcements. President Crowder made no additional announcements.

21. **INFORMATION:** New Business: No new business was heard at this time.

(Item 22 was heard after Item 16)

23. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. No public comment was heard at this time.

24. **ADJOURNMENT:** The meeting adjourned at 6:50 p.m.

Respectfully submitted by,

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_page.asp?id=34562 (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org.*

Amended in Commission Meeting 9/27/05

FILE NO. 2005-05-COE

RESOLUTION NO. 005-05-COE
September 27, 2005

[Recommending support for Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses with a first-source hiring policy]

Resolution supporting Board of Supervisors Ordinance File 050922 titled "Payroll Expense Tax Exclusion for Qualified Renewable Energy Business" that amends the Payroll Expense Tax Ordinance to establish a tax-exclusion for qualified renewable energy businesses and requesting that all efforts will be made to have a first-source hiring policy.

WHEREAS, The San Francisco Board of Supervisors is considering an Ordinance File Number 050922 titled "Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses" that amends the Payroll Expense Tax Ordinance to establish a tax-exclusion for qualified renewable energy businesses; and,

WHEREAS, Such tax exclusions would encourage the development of clean energy technology and businesses locating, relocating and or expanding operations in San Francisco; and,

WHEREAS, The Commission on the Environment requests that all efforts will be made to have a first-source hiring policy; now, therefore, be it

RESOLVED, The Commission on the Environment recommends that the Board of Supervisors adopt the Ordinance amending the Payroll Expense Tax Ordinance to establish a tax-exclusion for qualified renewable energy businesses and requests that all efforts be made to have a first-source hiring policy.

I hereby certify that this Resolution was adopted by the Commission on the Environment at its Regular Meeting on September 27, 2005.

Monica Fish

Monica Fish, Commission Secretary
VOTE: (4-0) (3 Absent)
Ayes: Commissioners Crowder, Pelosi Jr., King and Mok
Noes: None
Absent: Commissioners Desser, Rodriguez, and Wald

Amended in Commission Meeting 9/27/05

FILE NO. R-2005-04-COE **RESOLUTION NO. 004-05-COE**
September 27, 2005

[Amendment of Commission on the Environment Bylaws.]

Resolution amending the Commission on the Environment's Bylaws to change the Commission's Hydrogen and Renewable Energy Meeting Committee's regular meeting schedule.

WHEREAS, The Commission on the Environment wishes to revise its Bylaws to change the Commission's Hydrogen and Renewable Energy Meeting Committee's regular meeting schedule; now, therefore, be it

RESOLVED, the Bylaws are amended to read as follows:

Article VII – Committees, Section 8: Hydrogen and Renewable Energy Committee

The Hydrogen and Renewable Energy Committee shall meet on the fourth Wednesday of February, April, June, August, and October at 5:00 p.m. and the second Wednesday in December at 5:00 p.m. in Room 421, City Hall, One Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Committee will work toward a plan for 100% renewable energy for the city's electricity and transportation fuels in less than 25 years. The Committee will focus on the potential role of hydrogen (from water & renewable energy), tidal power and other innovative ideas.

This information shall be posted on the Department of the Environment's website.

I hereby certify that this Resolution was Adopted at the Commission on the Environment's Meeting on September 27, 2005.

Monica Fish

Monica Fish, Council Secretary

VOTE: Adopted (4-0) (3 Absent)

Ayes: Commissioners Crowder, Pelosi Jr., King, and Mok

Noes: None

Absent: Commissioners Desser, Rodriguez and Wald

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SAN FRANCISCO COMMISION ON THE ENVIRONMENT

BYLAWS

As Amended Through September 27, 2005

Article I – Identification

Article II – Mission Statement

Article III – Commission on the Environment

Article IV – Officers

Article V – Commission Staff

Article VI – Meetings of the Commission

Article VII - Committees

Article VIII – Requests for Notice and Agendas – Voting

Article IX – Parliamentary Procedures

Article X – Code of Ethics

Article XI – Amendment of Bylaws

COMMISSION ON THE ENVIRONMENT
BYLAWS

Article I - Identification

Section 1: Name

The Commission on the Environment.

Section 2: Office

The Commission on the Environment shall be located at 11 Grove Street, San Francisco, California, 94102, or such other address where the Commission may be located from time to time. The telephone number for the Commission is (415) 355-3709.

Section 3: Compliance with Applicable Laws

The Commission shall comply with all applicable laws, including but not limited to the Ralph M. Brown Act (Cal. Government Code Section 54950 *et seq.*), the Political Reform Act of 1974 (Cal. Government Code Section 81000 *et seq.*), the San Francisco Charter, the San Francisco Sunshine Ordinance (San Francisco Administrative Code Section 67.1 *et seq.*), the Compensated Advocacy and Officeholder Accounts initiative (San Francisco Administrative Code App. 11); and the Improper Government Activities Ordinance, San Francisco Administrative Code Section 16.400 *et seq.*

Article II - Mission Statement

Section 1: The Commission on the Environment

The mission of the Commission on the Environment is to improve, enhance, and preserve the environment; and to promote San Francisco's long-term environmental sustainability as laid out in Section 4.118 of the City Charter.

Article III - Commission on the Environment

Section 1: Number

The Commission on the Environment shall consist of seven members appointed by the Mayor, pursuant to Section 4.118 of the City Charter.

Section 2: Term of Appointment

The term of each commissioner shall be four years, unless removed by the Mayor, at his or her discretion.

Section 3: Compensation

Commissioners shall serve without compensation.

Section 4: Oath of Public Office

Acceptance of the Oath of Public Office constitutes the Commission's sworn responsibility to the public trust. Members are required to serve well and to faithfully discharge their duties and responsibilities diligently and in a manner consistent with the laws of the City and County of San Francisco, and all applicable state and federal laws.

Section 5: Function

The Commission on the Environment shall be responsible for the development and success of an overall sustainability strategy for the City of San Francisco. It shall have responsibility for the development of environmental policies, strategies, practices and programs for the Department of the Environment in San Francisco. Consistent with Section 4.118 of the City Charter, the Commission shall advise other city agencies and work with them to reduce negative impacts on the environment in areas of their jurisdiction and activities and augment their efforts to communicate environmental issues to the general public.

Section 6: Duties and Responsibilities

A. The Commission on the Environment shall:

(1) Establish policies and directives for the Department of the Environment;

(2) Nominate qualified candidates for the position of Director of the Department of the Environment for appointment by the Mayor and evaluate the performance of the Director at least once a year;

(3) Conduct public education and outreach to the community on environmental issues;

(4) Have the authority to review and make recommendations on any policy proposed for adoption by any City agency regarding conformity with the long-term plans for environmental sustainability, except for those regarding building and land use;

(5) Have the authority to investigate and make recommendations to all City agencies related to operations and functions, such as solid waste management, recycling, energy conservation, natural resource conservation, environmental inspections, toxics, urban forestry and natural resources, habitat restoration and hazardous materials; and

(6) Review and approve the Department of the Environment's budget, budget modifications or fund transfers.

B. The Department of the Environment shall:

(1) Produce and regularly update an assessment of San Francisco's environmental condition;

(2) Produce and regularly update plans for the long-term environmental sustainability of San Francisco; and

(3) Manage the environmental programs, duties and functions assigned to it pursuant to Section 4.132 of the City Charter, or by ordinance.

Section 7: Excused Absences

If a Commissioner provides prior notification of absence from Commission and Committee meetings to the President of the Commission, then such absence is considered an excused absence. If no prior notice is received by the President or Secretary of the Commission, then the minutes shall note that the absence is unexcused.

Section 8: Absence from the State

Any member of the Commission who plans to be absent from the State of California for an extended period shall notify the President of the Commission.

Article IV - Officers

Section 1: Officers

The officers of the Commission are a President and Vice-President. The President and Vice-President shall serve at the pleasure of the Commission.

Section 2: Term of Office

The term of each office shall be one year.

Section 3: Nomination and Election of Officers

A. Elections for officers shall be conducted at the regular meeting of the Commission in October of each year. At the regular Commission meeting held in September of each year, any Commissioner interested in running for office shall state publicly his or her interest and willingness to run for a specific office. Such Commissioners, and any other Commissioners nominated at the October meeting, shall be candidates for office.

B. If the office of the President is vacated before the expiration of a term, the Vice President shall serve as President until the next regular meeting. The Commission shall conduct an election for President at the next regular meeting to fill the vacancy. If the Vice President is elected as President, there shall be an election for a new Vice President at that meeting. If the office of Vice President is vacated before the expiration of a term, it shall remain vacant until the next regular meeting, at which time an election shall be held. Any Commissioners nominated at a meeting at which a special election is held shall be candidates for office.

Section 4: General Duties and Responsibilities of the President

The President shall preside at all meetings of the Commission. The President, working with the Commission Secretary and Director of the Department of the Environment, shall oversee the preparation and distribution of the agenda for all regular Commission meetings. The President shall be accountable to the Commission as a whole in setting policy and shall also perform such other duties as may be assigned by the Commission. The President (and/or his/her designee) shall serve as the liaison to the media and the other departments, agencies and commissions of the City and County of San Francisco, as necessary.

Section 5: General Duties and Responsibilities of the Vice-President

The Vice-President shall perform the duties and responsibilities that may be delegated by the President. In the absence or disability of the President, the Vice-President shall perform the duties as described above, in Section 4 of this article.

Article V - Commission Staff

Section 1: Director

The Director is appointed by the Mayor, from a list of candidates proposed for his or her consideration by the Commission. The Director serves as the chief executive and administrator of the Department of the Environment and shall have the duties and powers which are set forth in the Charter and ordinances of the City and County of San Francisco, including those duties set forth above, in Section 6(B) of Article III. The Director shall attend all meetings of the Commission. The Director shall report on all matters regarding the Department of the Environment which are of concern to the Commission.

Section 2: Commission Secretary

The staff of the Department of the Environment shall include a Commission Secretary, who is hired by the Commission. The Commission Secretary shall attend all meetings of the Commission. Under the supervision of the President, which supervision may be delegated to the Director, the Commission Secretary is responsible for the proper recording and distribution of all Commission actions, correspondence, and agendas, and ensuring that the Commission meetings are properly publicly noticed and held at locations which are accessible to persons with disabilities. The Commission Secretary shall also perform such other duties as may be assigned by the Commission and Director, including but not limited to: conducting research, assisting committee chairs and officers, making recommendations on assigned projects, answering questions from the public about Commission activities and procedures, helping Department staff prepare for presentations before the Commission, and representing the Commission and Department at public gatherings, as appropriate.

Section 3: Legal Advisor

The City Attorney, or his or her designee, shall be the legal advisor to the Commission. If the City Attorney determines in writing that he or she cannot, consistent with the Rules of Professional Conduct, provide advice sought by the Commission, the City Attorney may recommend that the Commission retain outside counsel.

Article VI – Meetings of the Commission

Section 1: Quorum

At all meetings of the full Commission, the presence of a majority of the members shall constitute a quorum for all purposes. The affirmative vote of a majority of the members shall be required for the approval of any matter, regardless of the number of vacancies on the Commission or number of members present at the meeting. Based on a membership of seven, four members constitute a quorum. Likewise, four affirmative votes are required for the approval of any matter.

Section 2: Voting and Abstention

Each member present at a Commission meeting shall vote "yes" or "no" when a question is put, unless excused from voting by a motion adopted by a majority of the members present, or unless the member has a conflict of interest which legally precludes participation in the vote. Whether a Commissioner has a conflict of interest which precludes participation in a vote is determined on a case by case basis and, to the extent possible, in consultation with a legal advisor from the City Attorney's office.

Section 3: Public Participation

The Commission shall hold meetings open to the public and encourage the participation of interested persons. Each person wishing to speak on an item before the Commission shall be permitted to be heard once for up to three minutes. Time limits shall be applied uniformly to members of the public wishing to testify. The total time for public comments may be limited by the President in a manner consistent with the San Francisco Sunshine Ordinance. Each agenda for regular meetings shall provide an opportunity for members of the public to directly address the Commission on items of interest to the public that are within the Commission's jurisdiction. The Public Comment opportunity shall appear on the agenda after "New Business"; except that, at the President's discretion, the Public Comment can be heard earlier in the agenda.

Speakers at Commission meetings are requested, but not required, to identify themselves and fill out cards placed near the public microphone. The information is used to help prepare the minutes of the meeting.

Speakers must address the Commission from the podium. The Commission will not tolerate disruptive or inappropriate conduct. The President or presiding officer shall order removed from the meeting room any person who engages in such conduct or interrupts the orderly course of the meeting.

Section 4: Audio Recordation

Each meeting of the Commission, including any closed session, shall be audio recorded.

Section 5: Meeting Minutes

Minutes shall be taken at every regular and special Commission, shall be available to the public as required by law, and shall be approved by the majority vote of the Commission.

If provided by the public commenter, written summaries of public comments that are 150 words or less will be appended to the minutes. The minutes will clearly state that such comments are public comments and do not represent the comments of the Commission, the Department, the City and County of San Francisco or any employee or agency thereof.

Section 6: Regular Meetings

Beginning November 2004 the regular Commission meetings shall be held bi-monthly on the fourth Tuesday of January, March, May, July, September and November at 5:00 p.m., except in the case of a City-recognized holiday, when the meeting shall be held on the first following Tuesday. Meetings shall be held at City Hall, 1 Dr. Carlton B. Goodlett, Jr. Place, Room 416, in the City and County of San Francisco. This information shall be posted on the Commission's website.

Section 7: Special Meetings

The President of the Commission may call special meetings to address specific matters.

Section 8: Closed Sessions

The Commission is authorized to hold closed (non-public) sessions at regular and special meetings for purposes of confidential discussions, such as the discussion of job performance, or dismissal of employees, or pending litigation. Upon consultation with a legal advisor from the City Attorney's office, and the determination that a closed session is both authorized and appropriate under the circumstances, the President of the Commission may call for a closed session. Appropriate notice shall be given of all closed sessions.

Section 9: Agenda Preparation

The agenda for meetings is prepared through the joint effort of the President, the Director of the Department of the Environment, and the Commission Secretary. The Commission Secretary shall work with the President, committee Chairs, Director and the Commission's legal advisor to develop the agenda. The agenda shall consist of items requested by the President, the Director or the Commission. The agenda shall contain form language required by law.

The agenda shall refer to explanatory public documents that have been provided to the Commissioners prior to the preparation of the agenda, and shall state that the documents are available for public inspection at the Department's office during normal office hours. Explanatory documents of one page or less shall be posted with the agenda.

Section 10: Mailing and Posting of Agendas for Regular and Special Meetings of the Commission

Notices and agendas of all regular and special Commission meetings shall be posted at the San Francisco Main Library Government Information Center, the meeting site, the Commission's website, the Department's office and mailed to each Commissioner and any person who files a written request for such notice with the Commission. Agendas for regular meetings shall be mailed and posted at least 72 hours before the meeting.

Section 11: Special Meeting at Alternative Location

In the case of a special meeting held at a location other than the regular Commission meeting place, notice (but not the agenda) shall be given in the manner stated in section 10 above, 15 days before the meeting. Agendas for a special meeting at an alternative location shall be given in the manner stated in section 10 above.

Section 12: Cancellation, Continuing or Rescheduling Meetings

Notice of a cancellation, continuance or rescheduling will be provided to the public as soon as reasonably possible. The notice shall be posted at the San Francisco Main Library Government information Center, at the meeting site and on the Commission's website. If time permits, notice of the meeting change shall be provided to any person who files a written request for such notice with the Commission.

Article VII - Committees

Section 1: Membership of Committees

Committee members shall be appointed by the President of the Commission for one-year terms. Each committee shall have no more than three members.

Section 2: Committee Chairs

It is the policy of the Commission on the Environment to appoint individual Commissioners to perform specific tasks or functions related to matters which are brought before the Commission for action. The President may appoint individual Commissioners to serve as Committee Chair for a specified period of time.

Section 3: Committee Meetings

Committees shall meet at regularly scheduled times and places, as established by resolution or motion of the Commission. Meeting times shall be posted on the Commission's website. Agendas of committee meetings shall be noticed in accordance with Article VI sections

(9) and (10). Committee meetings will be generally conducted in the same manner as regular Commission meetings pursuant to Article VI sections (2) (3), (7), (8) , (11), and (12).

Section 4: Committee Quorum

A majority of the members of a committee shall constitute a quorum. The affirmative vote of the majority of the members shall be required for the approval of any matter, regardless of the number of vacancies on the committee or number of members present at the meeting.

Section 5: Minutes

Minutes for committee meetings will reflect the time the meeting was called to order and adjourned, the names of members attending the meeting, the roll call vote on each action item considered at the meeting, and any other items necessary for preserving a record of the meeting. Minutes shall be approved by a majority vote of the committee.

Section 6: Standing Committees

The Commission shall have three standing committees: (1) Operations, (2) Policy, and (3) Hydrogen and Renewable Energy. Each committee shall have three members.

Section 7: Operations Committee

The Operations Committee shall meet on the third Wednesday of January, April, July, and October at 4:00 p.m. at 11 Grove Street in the City and County of San Francisco. The Operations Committee shall have general responsibility for the budget, financial planning and operations of the Department of the Environment. This Committee shall work with the Director and make recommendations to the Commission for the financial well-being and effective administration of the Department's programs and activities, including the management of environmental programs, duties, and functions which have been assigned to the Department pursuant to Section 4.118 of the City Charter or by ordinance. This Committee shall also oversee the public education and outreach to the community on environmental issues and address issues regarding the environmental well-being of the City.

Section 8: Policy Committee

The Policy Committee shall meet on the fourth Thursday of each month at 5:00 p.m. in Room 421 City Hall, 1 Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Policy Committee shall have general responsibility for and oversee the long-term planning and policy development activities of the Department of the Environment, including the Department's assessment of San Francisco's environmental conditions, the development and update of plans for the long-term environmental sustainability of San Francisco, and the review and development of recommendations on any policy proposed for adoption by any City agency regarding conformity with the long-term plans for environmental sustainability. Specifically, the Policy Committee will focus on developing a plan for San Francisco to achieve the goal of zero waste to landfill by year 2020, and will explore resource conservation opportunities in the areas of water and toxins reduction. Furthermore, the Policy

Committee shall work with the Operations Committee and the Director of the Department of the Environment, to develop recommendations regarding restructuring of environmental programs and activities among the City agencies and departments.

Section 9: Hydrogen and Renewable Energy Committee

The Hydrogen and Renewable Energy Committee shall meet on the fourth Wednesday of February, April, June, August, and October at 5:00 p.m. and the second Wednesday in December at 5:00 p.m. in Room 421, City Hall, One Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Committee will work toward a plan for 100% renewable energy for the city's electricity and transportation fuels in less than 25 years. The Committee will focus on the potential role of hydrogen (from water & renewable energy), tidal power and other innovative ideas. This information shall be posted on the Department of the Environment's website.

Section 10: Other Committees

The Commission and/or the President, at his or her discretion, may establish other committees or task forces on an ad-hoc basis to perform tasks or functions as necessary, or to address issues outside the purview of the standing committees.

Article VIII – Requests for Notice and Agendas

A request from a member of the media or public to receive notices, agendas, or agenda packets for Commission or committee meetings must be in writing and specify what the person would like to receive and whether notice by email is preferred. Such requests will be valid until the following January. In January of each year, the Commission will ask each person on the list to re-affirm their desire to stay on the list for another year through a notice on the Commission's January agenda.

Article IX - Parliamentary Procedures

At the discretion of the President of the Commission or the committee Chair, and except where the Charter or other rules provide to the contrary, meetings shall be governed by Robert's Rules of Order.

Article X - Codes of Ethics

In accepting the Oath of Office, Commissioners shall maintain the highest standards of professional and personal conduct. They shall support the mission, goals and objectives of the San Francisco's Commission on the Environment; instill in the public a sense of confidence about the Commissions' conduct and intentions; uphold all laws and regulations; refrain from using their official positions to secure special advantage or benefit for themselves or others.

In order to set the highest standards of conduct, and in order to assure public confidence in the Commission's operations, the Commission on the Environment commits itself to:

* Encouraging and promoting integrity in government by education and example;

* Being accountable for its rules of procedure and decisions, and promoting accountability of all members of the Commission and Department staff;

* Treating all Department staff, members of the public, and colleagues with courtesy, respect, objectivity, and fairness;

* Conducting all Commission business in a timely manner and in public meetings, with full disclosure of policies, procedures, and decision-making processes, except for those matters authorized under the Brown Act and the San Francisco Sunshine Ordinance to be considered in closed session; and

* Reviewing its actions, recommendations, and procedures periodically to determine whether the Commission has adhered to its Code of Ethics and mission in all respects.

Article XI - Amendment of Bylaws

These bylaws shall be reviewed as necessary and may be amended at any meeting of the Commission by a majority vote, provided such proposed amendments are circulated in writing to all Commissioners and the intent to revise the bylaws is noticed to the public at least ten (10) days prior to such meeting.

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

SF
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approved

CITY AND COUNTY OF SAN FRANCISCO
COMMISSION ON THE ENVIRONMENT
REGULAR MEETING
APPROVED MINUTES

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Tuesday, September 27, 2005, 5:00 P.M.
City Hall, Room 416
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

COMMISSION MEMBERS: Commissioners Nia Crowder (President); Paul Pelosi Jr. (Vice President); Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

   The meeting was called to order at 5:10 p.m. Present: Commissioners Crowder, Pelosi Jr., King, and Mok. Excused: Commissioners Desser, Rodriguez, and Wald.

2. **ACTION:** Adoption of Minutes of the July 26, 2005 Meeting.

   No public comment was heard at this time. Upon motion by Commissioner Pelosi Jr., the July 26, 2005 Regular Meeting Minutes were approved by the following vote:

   VOTE: Approved (4-0) (3 Absent)
   AYES: Commissioners Crowder, Pelosi Jr., King and Mok
   NOES: None
   ABSENT: Commissioners Desser, Rodriguez, and Wald

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. There were no public comments at this time.

4. **INFORMATIONAL PRESENTATION:** Waste Characterization Study: Analysis of what is left in San Francisco's waste stream (Explanatory Document: Waste Characterization Study August 2005 (PDF)).
   SPONSOR: Jared Blumenfeld, Director
   SPEAKER: Dan Sicular, Senior Project Manager, Environmental Science Associates

   Mr. Sicular gave a presentation on the results of the Waste Characterization Study that Environmental Science Associates performed to characterize the materials in San Francisco's landfill waste through various waste streams. Main topics discussed included:

   - Consultant team retained to perform the work;
   - Waste stream sampling produced in San Francisco consisting of hand sorted samples and visual characterizations of loads from various sources. All samples studied were disposed through Norcal Waste Systems and destined for landfill;
   - Materials landfilled through Norcal for 2003-2004 and top six materials San Francisco sends to landfill waste;
   - Summary composition of all material by categories, composition comparison of landfilled materials, and composition comparison of landfilled materials from Fantastic 3 Program by single family, multi-family and commercial governmental institutional sources;
   - Landfilled compostable food and all landfilled compostable material;
   - Landfilled recyclable paper and all landfilled recyclables;
   - Detail of landfilled recyclable paper (type of paper) and of landfilled recyclables other than paper (plastic, glass, metal, C&D);
   - Comparison of 1996 and 2005 waste composition of five recoverable materials (food, cardboard, newspaper, glass containers, plastic containers).

5. **INFORMATIONAL PRESENTATION:** Toxicity Profile: Study on toxicity in waste stream (Explanatory Document: Toxicity Profile of Disposed Waste Generated Within San Francisco (PDF)).
   SPONSOR: Jared Blumenfeld, Director
   SPEAKER: George Savage, Executive Vice President, CalRecovery Inc.

   Mr. Savage gave a presentation on the toxicity profile of the waste stream that goes to landfill. The project objective is to determine toxicity of disposed wastes and methods to reduce the toxicity. The five major methodology steps applied to this project were discussed as follows:

   1. Define quantities and characteristics of waste types (a list of approximately 40 different materials) and analyze potential hazardous materials in samples;
   2. Identify typical chemical compounds in or hazards represented by non-regulated hazardous wastes (NHW);
   3. Identify key hazard characteristics of NHW wastes;
   4. Determine which NHW represent the greater risks based on quantities and characteristics and severity of risk;
   5. Determine which NHW represent the greater risks based on whether the risks are those to workers, the public, or the environment.

A discussion was held on the NHW categories used in the toxicity profiling analysis, hazard characteristics used in the analysis, and composition of NHW in disposed waste. Future work will consist of identifying what NHWs are the most dangerous, how risks can be reduced, and how the City can monitor the toxicity of the disposed waste stream and the effectiveness of management programs.

6. **INFORMATIONAL PRESENTATION:** Biodiesel and City Departments.
SPONSOR: Jared Blumenfeld, Director
SPEAKER: Kevin Drew, Residential Recycling Coordinator

Mr. Drew discussed the benefits of and community support for biodiesel, a renewable engine fuel made from any natural plant oil or animal fat, including recycled vegetable oil as described in the "Biodiesel presentation-San Francisco Commission on the Environment-September 27, 2005; Benefits of Biodiesel" handout distributed at the Commission meeting. Several benefits discussed included the reduction in particulate matter and carcinogens, fuel security for disaster preparedness, federal incentives, local job creation, and stabile non-toxic nonflammable fuel as well as many other benefits.

Public comment from Mr. Eric Bowen, President, San Francisco Biofuels Cooperative encouraging the Commission to consider San Francisco biodiesel needs and to take action to support two initiatives currently underway that (1) is working toward getting biodiesel use in San Francisco fleets and (2) another to help remove barriers to biodiesel use for private vehicles in San Francisco.

Public comment from Mr. Michael Ferry, San Francisco Fire Department on initiating a biodiesel pilot program in the Fire Department in January or February located in Battalion 10, Bayview/Hunter's Point District. President Crowder asked for an update after initiation of the program.

Public comment from Mr. Ben Jordan, Civil Engineer thanking the Commission for their work and spoke in support of biodiesel programs in San Francisco. Discussed Biofuel Recycling, a nonprofit organization that is working on developing ecological ways to collect vegetable oil from residents and restaurants to be used in local fleets and vehicles.

Public comment from Mr. Adam Hagen, President, Eureka Valley Neighborhood Association to encourage the Commission to consider the use of biodiesel for City vehicles and the public as well as supporting tax-incentives for using biodiesel.

7. **DISCUSSION and POSSIBLE ACTION:** Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses (Board of Supervisors File No. 050922). Commission may vote on a Resolution supporting the legislation (Explanatory Documents: Board of Supervisors Ordinance File No. 050922 Introduced May 24, 2005 (PDF) and Draft Resolution Supporting Legislation (Word)).

SPONSOR: Commissioner Nia Crowder
SPEAKER: Jared Blumenfeld, Director

Director Blumenfeld described the amendment to the Payroll Tax Ordinance to establish exclusion for qualified renewable energy businesses. The Ordinance will be heard at the Board of Supervisors Budget and Finance Committee on Thursday, September 29, 2005. He advised the Commission that the Department is working on a holistic clean-tech initiative, and that the Mayor will be announcing new developments around the initiative.

Public comment from Mr. Eric Bowen requesting the Commission's support of the amendment to the Payroll Tax Ordinance.

Upon Motion by Commissioner Pelosi Jr. and second by Commissioner Mok, the Commission Resolution File No. 2005-05-COE recommending support for Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses Ordinance was not adopted by the following vote:

VOTE: Not Adopted (3 AYES; 1 NOE) (3 Absent)
AYES: Commissioners Crowder, Mok, and Pelosi Jr.
NOES: Commissioner King
ABSENT: Commissioners Desser, Rodriguez and Wald

Commissioner King recommended that the Ordinance include a clause that all efforts be made to include a first-source hiring policy.

Upon Motion by Commissioner King and second by Commissioner Pelosi Jr., Resolution File No. 2005-05-COE recommending support for Payroll Expense Tax Exclusion for Qualified Renewable Energy Businesses Ordinance with an amendment to add a clause that all efforts be made to include a first-source hiring policy was adopted by the following vote:

VOTE: Adopted (4-0) (3 Absent)
AYES: Commissioners Crowder, King, Mok, and Pelosi Jr.
NOES: None
ABSENT: Commissioners Desser, Rodriguez and Wald

8. **INFORMATIONAL PRESENTATION:** Update on Environmentally Preferable Purchasing Program and Presentation of Public Participation Guidelines (Explanatory Documents: Department Regulations SFE2005-01-PPO and SFE2005-02-PPO and How Commodities are Purchased under San Francisco's Precautionary Purchasing Ordinance (PDF)).

SPONSOR: Jared Blumenfeld, Director
SPEAKERS: Chris Geiger, City Toxic Reduction Coordinator and
Deanna Simon, City Toxic Reduction Specialist Assistant

Mr. Geiger gave an update on implementation of the Environmentally Preferable Purchasing for Commodities Ordinance and a status report on janitorial chemicals contracts. He advised that the Director has signed two Regulations, one administrative and is required in the Ordinance, and the second is the Public Participation Guidelines. The next steps in Ordinance implementation will be to present targeted categories that will result from the Department's prioritization process and will be scheduled for the March 28, 2006 Commission meeting.

Ms. Deanna Simon discussed office supplies, lamps, and batteries contracts. She advised that City Departments would be buying only post-consumer paper products when available and that Office Depot has implemented an on-line ordering system blocking certain products. Developments were discussed as follows: City departments are now purchasing rechargeable batteries. The Department has conducted City-purchaser training sessions providing fact sheets for City departments, meeting with lamp and bulb vendors to discern which lamps are preferable, and working with the Public Utilities Commission (PUC) to develop fact sheets to improve what the City is buying for energy efficiency and mercury content.

9. **INFORMATIONAL REPORT:** Status Report on the Climate Action Plan (Explanatory Document: Update on the Climate Action Plan (Word) and Climate Action Plan Executive Summary (PDF)).

SPONSOR: Commissioner Nia Crowder
SPEAKERS: Cal Broomhead, Energy Manager and
Melissa Capria, Climate Action Coordinator

Director Blumenfeld introduced Melissa Capria, Climate Action Coordinator for the Department of the Environment. Ms. Capria discussed her background working with local governments and her initial tasks as the Climate Action Coordinator that are described in the "Update on the Climate Action Plan" explanatory document.

Commissioner King asked if work would be toward climate control citywide or regionally. Ms. Capria indicated that the first step would be to reduce the City's emissions and then the goal would be to reduce emissions community-wide.

President Crowder indicated that the Commission would be monitoring the intersection between City and State goals through the Hydrogen & Renewable Energy Committee.

10. **DISCUSSION and POSSIBLE ACTION:** Status Report on Treasure Island Development Authority (TIDA) Environmental Goals: Commission may consider requesting a joint public hearing between the Commission and TIDA on the Treasure Island Draft Sustainability Report.

SPONSOR: Commissioner Nia Crowder
SPEAKERS: Jared Blumenfeld, Director,
Jack Sylvan, Treasure Island Project Manager, Mayor's Office of Workforce & Economic Development-Base Reuse

Mr. Sylvan gave a status report on the Treasure Island Draft Sustainability Plan that was presented to the Citizens Advisory Board and the Treasure Island Development Authority Board (TIDA). He advised the Commission that significant revisions would be made to the Land Use Plan as a response to public comment and hiring of a new development team. Changes to the Land Use Plan will have implications to the Sustainability, Infrastructure, and Transportation Plans. As a result, the Draft Sustainability Plan would be revised based on the land use planning process and public input received. The Term Sheet Forward Schedule will have an updated Sustainability Plan that will be a public process with input from the Department of the Environment and consultants. Mr. Sylvan advised that the Commission's comments should be addressed to him and the TIDA Board.

President Crowder indicated that a formal request would be made to have a joint meeting with the Commission on the Environment and the TIDA Board and asked to be included in the Term Sheets.

Public comment from Ms. Ruth Gravanis commending the Draft Sustainability Plan and recommended strengthening the Plan by (1) not making assumptions about transit hubs and (2) not making assumptions that everyone has an automobile. She urged the Commission to hold a public hearing to review the location of transit hubs. President Crowder stated that the Commission would be holding a future public hearing.

Public comment from Mr. Clayton Mansfield, Sierra Club encouraging the Commission to continue to provide input to TIDA to make a good plan better in order to make Treasure Island a better place to live and work.

11. **INFORMATIONAL REPORT:** Community Outreach and Report on the westbound portion of the Bay Bridge bike lane.

SPONSOR: Commissioner Nia Crowder
SPEAKER: Andy Thornley, Program Director, San Francisco Bike Coalition

Mr. Thornley gave an informational report on the benefits of a San Francisco-Oakland Bay Bridge west span pathway and asked the Commission for endorsement. He reported that the east span is being rebuilt and will be completed approximately 2012. It will contain a pedestrian bicycle maintenance side path to allow pedestrians, bicycles, and maintenance crews to traverse the east span of the bridge between Yerba Buena and West Oakland, but would not extend to Treasure Island whereas a west span pathway would.

He reported that a feasibility study was conducted five years ago and it established that it would be feasible and practical to attach a west span pathway. Endorsement has been secured from the Board of Supervisors and the Mayor, and a request has been made for the California State Legislature and/or the Metropolitan Transportation Commission to include funding for the west span transportation link. He asked the Commission to join the other endorsees and place this item on the next Commission meeting agenda as an action item supporting the west-span pathway.

Public comment from Ms. Ruth Gravanis urging the Commission to consider a Resolution to (1) urge the Treasure Island Development Authority to endorse a west span pathway and (2) to indicate that planning should begin now on how the west span pathway would be incorporated and integrated into the Bay Trail and the rest of transportation planning for Yerba Buena and Treasure Island.

12. **DISCUSSION and ACTION:** Proposed Amendment to the Bylaws of the San Francisco Commission on the Environment to amend the regular meeting date of the Hydrogen & Renewable Energy Committee (Explanatory Documents: Notice of Proposed Amendment to the Bylaws and Draft Resolution Amending Bylaws (Word)).

Upon Motion by Commissioner Pelosi Jr. and second by Commissioner Mok, Resolution File No. R-2005-05-COE Amendment of Commission on the Environment Bylaws of the San Francisco Commission on the Environment to amend the regular meeting schedule of the Hydrogen & Renewable Energy Committee was adopted with an amendment to read as follows:

> "Article VII – Committees, Section 8: Hydrogen and Renewable Energy Committee
> The Hydrogen and Renewable Energy Committee shall meet on the fourth Wednesday of February, April, June, August, and October at 5:00 p.m. and the second Wednesday in December at 5:00 p.m. in Room 421, City Hall, One Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Committee will work toward a plan for 100% renewable energy for the city's electricity and transportation fuels in less than 25 years. The Committee will focus on the potential role of hydrogen (from water & renewable energy), tidal power and other innovative ideas. This information shall be posted on the Department of the Environment's website."

VOTE: Adopted (4-0) (3 Absent)
AYES: Commissioners Crowder, King, Mok, and Pelosi Jr.
NOES: None
ABSENT: Commissioners Desser, Rodriguez, and Wald

13. **DISCUSSION:** Interest in Commission Office. As stated in the Commission of the Environment Bylaws, Article IV – Officers, Section 3A: "At the regular Commission meeting held in September of each year, any Commissioner interested in running for office shall state publicly his or her interest and willingness to run for a specific office." Elections will be held at the November Regular Meeting.

President Crowder indicated interest in the office of President and Commissioner Pelosi Jr. in the office of Vice President.

14. **INFORMATIONAL PRESENTATION and FUTURE ACTION:** San Francisco Environment proposed move from 11 Grove to 25 Van Ness. Specific focus on plans to retain Eco-Center and ensure that move is done in a cost effective manner. Vote on plan of action for move at the next Commission meeting. A meeting is to be scheduled for the October Finance and Operations Committee meeting.

SPONSOR: Commissioner Paul Pelosi Jr.

David Assmann, Deputy Director discussed the Department's proposed move to the ground floor of 25 Van Ness Avenue, a City-owned building, and the opportunity for the Department to redesign and make it into a world class green-building facility and eco-center. He reported that the ground floor space is available in August 2006, and it is the Department's preference to move in January 2007 to allow for renovation time. The Department would have to raise approximately $1 million dollars over the next sixteen months to pay for renovation expenses. He reported that the Department has renegotiated with the present landlord at 11 Grove Street for a 33 percent reduction in rent for a one-year extension. This item will be continued to the November Commission meeting for further discussion and action.

15. **INFORMATION:** Commission Secretary's Report

Monica Fish, Commission Secretary. The Commission Secretary reported the following:

- Communications and Correspondence: A letter of introduction was received from Linda Eggerth, San Francisco Ratepayer Advocate dated September 15, 2005 and emailed to the Commission on the same date.

- Update on Pending City Legislation: Two Ordinances were heard by the Board of Supervisors City Operations and Neighborhood Services Committee on Monday, September 19, 2005—(1) Public Works Code-significant trees, landmark trees, and penalties for violations sponsored by Supervisor Daly (Committee voted to forward to the full Board with a recommendation not to approve), and (2) Public Works Code-landmark trees and penalties for violations sponsored by Supervisor McGoldrick (Committee voted to forward to the full Board with a recommendation for approval). Differences in the two Ordinances were outlined in the Commission Secretary's Report dated September 27, 2005.

16. **INFORMATION:** Hydrogen and Renewable Energy Committee Report

- Chair's Report: President Crowder highlighted the August 29, 2005 meeting reporting that there was a review of wave and tidal projects, community choice aggregation, and an update on the Climate Action Team. She reviewed the agenda for the upcoming Meeting on October 26, 2005 requesting a status report on hydrogen fueling trailer usage and implementation of Prop I in regards to vehicle procurement from MUNI.

Item 22 was heard after Item 16.

22. **FUTURE AGENDA ITEMS:** Commissioner Crowder requested the following items be placed on the November Commission meeting agenda: Presentations by Marshall Foster, the Mayor's Director of Greening, and the Green Technical Manager on goals, oversight and projected short-term achievements, and (2) Rhode Island's activities on plastic bag recycling and collection and an update on the Department's efforts. First quarter agenda items: joint PUC and Environment Commission meeting on restoration of Hetch Hetchy, presentation from supporting and opposing sides.

17. **INFORMATION:** Operations Committee Report
    - Chair's Report: Commissioner Pelosi Jr. reviewed the agenda for the upcoming meeting on October 19, 2005 that will be rescheduled to October 17, 2005 at 4:00 p.m. Agenda items are as follows: review environmental justice programs and grant material to make sure that guidelines are being enforced and suggestions to grant applications are being followed. Commissioner Mok reported that Commissioners would be giving comments on the Strategic Plan at the October meeting.

18. **INFORMATION:** Policy Committee Report. No report was given at this time.

19. **INFORMATION:** Director's Report
    - Jared Blumenfeld, Director, Department of the Environment gave updates on San Francisco Environment administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division as explained in the Director's Monthly Report for August and September 2005. He announced that the Port voted to approve the Literacy for Environmental Justice lease for the Department's grant.

20. **INFORMATION**: President's Announcements. President Crowder made no additional announcements.

21. **INFORMATION:** New Business: No new business was heard at this time.

(Item 22 was heard after Item 16)

23. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. No public comment was heard at this time.

24. **ADJOURNMENT:** The meeting adjourned at 6:50 p.m.

Respectfully submitted by,
Monica Fish, Commission Secretary
TEL: (415) 355-3709; FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_page.asp?id=34562 (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org.*

Adopted: December 5, 2005

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO
COMMISSION ON THE ENVIRONMENT

*NOTICE OF RESCHEDULED MEETING

Tuesday, November 22, 2005, 5:00 P.M.
City Hall, Room 416
San Francisco, CA 94102

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COMMISSIONERS: Commissioners Nia Crowder (President), Paul Pelosi Jr. (Vice-President), Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald.

Commission Secretary: Monica Fish

***The Tuesday, November 22, 2005, 5:00 p.m. Regular Meeting of the Commission on the Environment has been rescheduled to a Special Rescheduled Meeting on Monday, December 5, 2005 at 5:30 p.m.** The meeting will be held at City Hall, One Dr. Carlton B. Goodlett Place, Room 408, San Francisco, CA. An agenda will be provided 72 hours prior to the meeting. Please contact the Department of the Environment Commission Secretary, Monica Fish, at 415-355-3709 or Monica.Fish@sfgov.org if you would like to be placed on the agenda list. An agenda may also be accessed on the website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506.

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

Posted: November 15, 2005

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO
COMMISSION ON THE ENVIRONMENT

*NOTICE OF SPECIAL RESCHEDULED MEETING AND AGENDA

Monday, December 5, 2005, 5:30 P.M.
City Hall, Room 408
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

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*The Commission on the Environment's Regular Meeting of Tuesday, November 22, 2005 at 5:00 p.m. has been rescheduled to Monday, December 5, 2005 at 5:30 p.m. and will be held in Room 408, City Hall.

COMMISSION MEMBERS: Commissioners Nia Crowder (President), Paul Pelosi Jr. (Vice President), Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez and Johanna Wald.

Commission Secretary: Monica Fish

12-02-05A10:26 RCVD

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

2. **ACTION:** Adoption of Minutes of the September 27, 2005 Regular Meeting (Explanatory Document: Draft Minutes of the September 27, 2005 Regular Meeting (Word))**.

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

4. **INFORMATIONAL PRESENTATION:** Overview of Mayor's Greening Initiative (Explanatory Document: Presentation to the Commission on the Environment 12.05.05 (Powerpoint))**.

SPONSOR: Commissioner Nia Crowder
SPEAKER: Marshall Foster, Director of Greening, Mayor's Office

Department of the Environment, City and County of San Francisco
11 Grove Street, San Francisco, CA 94102
Telephone: (415) 355-3700 • Fax: (415) 554-6393
Email: Monica.Fish@sfgov.org • www.sfenvironment.com

100% Post-Consumer Content

5. **INFORMATIONAL PRESENTATION and ACTION:** San Francisco Green Schoolyard Alliance: A Garden in Every School. The Commission will consider and vote on Resolution File No. R-2005-06-COE urging the Mayor's Office to work with San Francisco Green Schoolyard Alliance (SFGSA) and San Francisco Unified School District to create a garden in every school (Explanatory Document: Resolution File No. R-2005-06-COE (Word)).

   SPONSOR: Commissioner Arlene Rodriguez
   SPEAKERS: Becky Wike, Staff, Department of the Environment
   Nan McGuire, Chair of SFGSA and
   Arden Bucklin-Sporer, Director, Educational Gardens

6. **INFORMATIONAL PRESENTATION and ACTION:** Five-year Impound Account, Budget and Plan. The Commission will consider and vote on approving the Five-year Impound Account, Budget and Plan (Explanatory Document: Five Year Impound Plan (Excel)).

   SPONSOR: Commissioner Arlene Rodriguez
   SPEAKER: David Assmann, Deputy Director

7. **DISCUSSION and ACTION:** Nomination and Election of Officers. At the September 27, 2005 Commission meeting, Commissioner Nia Crowder expressed interest in the office of President and Commissioner Pelosi expressed interest in the office of Vice-President.

8. **INFORMATION: Commission Secretary's Report**
   Monica Fish, Commission Secretary

   - Communications and Correspondence

     1. Commission on the Environment Meeting Schedule 2006
     2. Bylaws as Amended Through September 27, 2005
     3. Policy on Discriminatory or Harassing Remarks Made a Public Meetings of City Boards and Commissions
     4. Mayor's Holiday Reception Invitation to Commission Members

   - Update on Pending City Legislation

     Board of Supervisors File 050922, Ordinance No. 249-05 approved on November 10, 2005 for Payroll Expense Tax Exclusion for Qualified Clean Energy Technology Businesses.

9. **INFORMATION:** Hydrogen and Renewable Energy Committee Report
   - Chair's Report: Commissioner Crowder will review the agenda for the upcoming meeting on December 14, 2005, 5:00 p.m. to be held at City Hall, Room 421.

10. **INFORMATION:** Operations Committee Report
    - Chair's Report: Commissioner Rodriguez will highlight the meeting of October 17, 2005 and review the agenda for the upcoming meeting on January 18, 2006 at 4:00 p.m. to be held at the Department of the Environment, Ground Floor Conference Room.

11. INFORMATION: Policy Committee Report

- Chairs Report: Commissioner Wald will highlight the meeting of November 9, 2005 and review the agenda for the upcoming meeting on January 26, 2006 at 5:00 p.m. to be held at City Hall, Room 421.

12. INFORMATION: Director's Report

- Jared Blumenfeld, Director, Department of the Environment will give updates on SFE administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division.

13. INFORMATION: New Business

14. FUTURE AGENDA ITEMS

15. PUBLIC COMMENTS: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

16. ADJOURNMENT

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506, (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org within three business days of a meeting.*

Public Comment

At this time, members of the public may address the Commission on items of interest that are within the subject matter jurisdiction of the Commission but are not on today's agenda. Public comment will be taken following each agendized item. Each member of the public may address the Commission for up to three minutes, unless otherwise announced by the President. If it is demonstrated that the comments by the public will exceed 15 minutes, the President may continue Public Comment to another time during the meeting.

The Brown Act forbids the Commission from taking action or discussing any item or issue not appearing on the posted agenda. This rule applies to issues raised in public comment as well. In response to public comment, not on an agendized item, the Commission is limited to:

1. Briefly responding to statements made or questions posed by members of the public, or
2. Request staff to report back on a matter at a subsequent meeting, or
3. Directing staff to place the item or issue on a future agenda (Government Code Section 54954.2(a).)

Disability Access

The Commission on the Environment Operations Committee Meeting will be held at the Department of the Environment, 11 Grove Street, in the Civic Center area. The meeting room is wheelchair accessible. The closest accessible BART station is the Civic Center Station at United Nations Plaza and Market Street. Accessible MUNI lines serving this location are: #71 Haight/Noriega and the F Line to Market and Van Ness and the Metro Stations at Van Ness and Market and at Civic Center. For information about MUNI accessible services call (415) 923-6142. There is accessible curbside parking adjacent to City Hall on Grove Street and Van Ness Avenue and in the vicinity of the Veterans Building at 401 Van Ness Avenue adjacent to Davies Hall and the War Memorial Complex.

The following services are available on request 48 hours prior to the meeting; except for Monday meetings, for which the deadline shall be 4:00 p.m. of the last business day of the preceding week: For American sign language interpreters or the use of a reader during a meeting, a sound enhancement system, and/or alternative formats of the agenda and minutes, please contact Monica Fish at (415) 355-3709 to make arrangements for the accommodation. Late requests will be honored, if possible.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call the Mayor's Office on Disability accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance
(Chapter 67 of the San Francisco Administrative Code)

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, Frank Darby, Sunshine Task Force Administrator, City Hall, Room 409, One Dr. Carlton B. Goodlett Place, San Francisco, CA 94102-4683 at Phone No.: (415) 554-7724; Fax No.: (415) 554-7854; E-mail: sotf@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct Code §2.100, et. seq] to register and report lobbying activity. For more information about the Lobbyist Ordinance, please contact the Ethics Commission at: 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300, fax (415) 581-2317; web site at www.sfgov.org/ethics.

Important Information

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

NOTE: Persons unable to attend the meeting may submit to the Commission on the Environment, by the time the proceedings begin, written comments regarding the agenda items above. These comments will be made a part of the official public record and shall be brought to the attention of the Commission on the Environment members. Any written comments should be sent to: Commission Secretary of the

Environment, 11 Grove Street, San Francisco, CA 94102 by 5:00 p.m. on the day prior to the hearing. Comments which cannot be delivered to the Commission Secretary by that time may be taken directly to the hearing at the location above.

When bringing handouts to meetings, please photocopy on both sides of the paper and try to use post-consumer recycled or tree-free paper. Also, please bring sufficient copies of handouts for the Commission, the Commission Secretary and the public.

Posted: November 30, 2005

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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: December 5, 2005

ITEM NO. 5

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Resolution File No. R-2005-06-COE SF Green Schoolyard Alliance: A Garden in Every School

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***This list reflects the explanatory documents provided.**

[A Garden in Every School]

Resolution urging the Mayor's Office to work with San Francisco Green Schoolyard Alliance (SFGSA) and San Francisco Unified School District to create a garden in every school.

WHEREAS, School gardens can enhance student learning in math, science, social studies, reading, writing, and nutrition[1]; and,

WHEREAS, Many school sites—with paved yards, fences, and block-like buildings—are unwelcoming and uninteresting play areas; and,

WHEREAS, Research shows that employing the environment as an integrating context for learning in K-12 education increases performance on standardized measures of academic achievement[2]; and,

WHEREAS, Students in outdoor classrooms exhibit improved behavior and interpersonal relationships [3]; and,

WHEREAS, In urban areas, well-designed school gardens may provide a child's most formative, sometimes only, experience with the natural environment; and,

WHEREAS, School gardens provide students the opportunity for hands-on, inquiry based learning, which is essential to model environmental stewardship and provide the skills and reinforcement that will bridge the gap between environmental knowledge and action[4]; and,

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[1] Gaining Ground: The Power and Potential of School Ground Greening in the Toronto District School Board, Evergreen, [http://www.evergreen.ca/en/lg/gaining_ground.pdf]
[2] Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning, State Education and Environmental Roundtable, [http://www.seer.org/extras/execsum.pdf]
[3] Gaining Ground: The Power and Potential of School Ground Greening in the Toronto District School Board, Evergreen, [http://www.evergreen.ca/en/lg/gaining_ground.pdf]

WHEREAS, Research demonstrates that when kids garden their attitudes towards vegetables improve, as well as their preference for healthier fruit and vegetable snacks[5]; and,

WHEREAS, School gardens help filter dust and pollutants and provide shade, thus lowering children's exposure to toxins[6]; and,

WHEREAS, The presence of trees and gardens has been linked to the extent to which residents feel satisfied with their community and where they live[7]; and,

WHEREAS, Gardens enhance school grounds and provide additional green space to communities; and,

WHEREAS, Many city departments and community groups are interested in developing and maintaining green space, including gardens, in San Francisco; and,

WHEREAS, On November 4, 2003, San Francisco voters approved Proposition A: School Bond, which allocated $2.0 million of bond proceeds to the greening of schoolyards at certain District schools [8]; and,

WHEREAS, The San Francisco Green Schoolyard Alliance (SFGSA) is a coalition of Bay Area civic organizations whose work supports schoolyard transformations from ordinary asphalt yards into ecologically rich green spaces for learning; and,

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[4] Schoolyard Learning: The Impact of School Grounds, Education Development Center, Inc., [http://www.edc.org/GLG/schoolyard.pdf]

[5] Research Support for Kid's Gardening, National Gardening Association, [http://www.kidsgardening.com/2005.kids.garden.news/research.pdf]

[6] Nature Nurtures: Investigating the Potential of School Grounds, Evergreen, [http://www.evergreen.ca/en/lg/nurtures-en.pdf]

[7] Nature Nurtures: Investigating the Potential of School Grounds, Evergreen, [http://www.evergreen.ca/en/lg/nurtures-en.pdf]

[8] Voter Information Pamphlet, Department of Elections: City & County of San Francisco, [http://sfpl4.sfpl.org/pdffiles/November4_2003.pdf]

WHEREAS, SFGSA provides technical assistance and resources to the thirty-plus schools that have schoolyard garden programs; now, therefore, be it

RESOLVED, The Commission on the Environment supports the efforts of the San Francisco Green Schoolyard Alliance and urges the Mayor's Office to work with SFGSA and the San Francisco Unified School District to create a garden in every school.

I hereby certify that this Resolution was adopted by the Commission on the Environment at its special meeting on December 5, 2005.

____

Monica Fish, Commission Secretary

Vote:
Ayes:
Noes:
Absent:

SF Environment
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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: December 5, 2005 **ITEM NO. 6**

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Five Year Impound Plan

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***This list reflects the explanatory documents provided.**

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEETING DATE: December 5, 2005

ITEM NO. 8

COMMISSION ON THE ENVIRONMENT

AGENDA PACKET CONTENTS LIST*

☒ Commission Secretary's Report December 5, 2005

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*This list reflects the explanatory documents provided.

SF Environment
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GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

MEMORANDUM

DATE: December 5, 2005

TO: Honorable Commissioners, Commission on the Environment

FROM: Monica Fish, Commission Secretary

RE: Commission Secretary Report December 5, 2005

COMMUNICATIONS AND CORREPONDENCE

Communications and correspondence received and included in the Commission meeting packet:

> Commission on the Environment Meeting Schedule for 2006. A proposed meeting schedule change and bylaws change notice for the Policy Committee will be posted for the January Commission meeting changing the Regular Meeting dates from the fourth Thursday monthly to the second Wednesday January - November at 5:00 p.m. A December Policy Committee meeting date and time is pending availability of meeting rooms.
>
> The "City and County of San Francisco Policy on Discriminatory or Harassing Remarks Made at Public Meetings of City Boards and Commissions" for your review.
>
> The Commission on the Environment's Bylaws as Amended Through September 27, 2005.
>
> Mayor's Holiday Reception Invitation to Commission Members.

PENDING CITY LEGISLATION

"Payroll Expense Tax Exclusion for Qualified Clean Energy Technology Businesses" approved on November 10, 2005—copy is included in the meeting packet.

♻ 100% Post-Consumer Content

Commission on the Environment

Meeting Schedule

2006

	Meeting Dates	
Commission on the Environment 4th Tuesday Odd numbered months 5:00 p.m. City Hall Room 416	1.24.06	Nia Crowder, President Paul Pelosi, Jr., Vice President Christina Desser Angelo King Alan Mok Arlene Rodriquez Johanna Wald
	3.28.06	
	5.23.06	
	7.25.06	
	9.26.06	
	11.28.06	

	Meeting Dates	
Meeting Schedule proposed for Bylaws Change on 1-24-06 to: Policy Committee 2nd Wednesday January - November 5:00 p.m. City Hall Room 421	1.26.06 Rescheduled to 1.11.06	Johanna Wald, Chair Christina Desser Arlene Rodriquez
	2.08.06	
	3.08.06	
	4.12.06	
	5.10.06	
	6.14.06	
	7.12.06	
	8.09.06	
	9.13.06	
	10.11.06	
	11.08.06	

	Meeting Dates	
Operations Committee 3rd Wednesday quarterly 4:00 p.m. Dept. Environment Ground Floor Conference Room	1.18.06	Arlene Rodriquez, Chair Paul Pelosi, Jr. Alan Mok
	4.19.06	
	7.19.06	
	10.18.06	

	Meeting Dates	
Hydrogen & Renewable Energy Committee 4th Wednesday Even numbered months 5:00 p.m. City Hall Room 421		Nia Crowder, Chair Paul Pelosi, Jr. Angelo King
	02.22.06	
	04.26.06	
	06.28.06	
	08.23.06	
	10.25.06	
	12.13.06	

Schedule based on proposed Bylaws Change for the January 24, 2006 Meeting

CITY AND COUNTY OF SAN FRANCISCO

POLICY ON DISCRIMINATORY OR HARASSING REMARKS MADE AT PUBLIC MEETINGS OF CITY BOARDS AND COMMISSIONS

1. City Policy And Governing Law Prohibit Discrimination Against Or Harassment Of City Employees.

The City invites public comment about its operations, including comment about the performance of its public officials and employees, at the public meetings of City boards and commissions. But City policies, along with federal, state and local laws, prohibit discrimination against or harassment of City employees based on race, sex and the other categories listed below. Discriminatory or harassing comments about or in the presence of City employees, even comments by third parties, may create a hostile work environment, if severe or pervasive.

City policy prohibits discrimination or harassment of its employees on the basis of:

> **Race, color, ancestry, national origin, ethnicity, place of birth, sex, age, religion, creed, disability or medical condition, HIV/AIDS status, sexual orientation, marital or domestic partner status, gender identity, parental status, pregnancy, weight or height or any other characteristic protected by state or federal employment discrimination laws or by the San Francisco Charter or local ordinance.**

The City Attorney's Office is available to assist Boards and Commissions in identifying prohibited discrimination or harassment.

In order to acknowledge the public's right to comment on City operations at public meetings, while taking reasonable steps to protect City employees from discrimination and harassment, City Boards and Commissions shall adhere to the following procedures.

2. How To Respond To Discriminatory Or Harassing Remarks Made At A Public Meeting.

If any person makes discriminatory or harassing remarks at a public meeting that violate the above City policy, the chair of the meeting shall immediately take the following actions:

a. The chair shall read the City's policy against discrimination and harassment, set forth above in bold type, into the record. The chair shall state that comments in violation of City policy will not be condoned and will play no role in City decisions.

b. The chair shall further state that any City employee in the room who is offended by the discriminatory or harassing remarks is excused from attendance at the meeting, and that no City employee is compelled to remain in attendance where it appears likely that speakers will make further discriminatory or harassing comments.

c. If that person or others continue to make discriminatory or harassing remarks that violate City policy, the chair shall remind the speaker of City policy, and then may recess the meeting temporarily. After this temporary interruption, speakers engaged in public comment shall be permitted to finish their allotted time.

3. How To Respond To Willful Disruption Of The Orderly Conduct Of A Meeting.

If persons engage in misconduct that disrupts the orderly conduct of the meeting, the chair shall follow the standards and procedures set forth in the state Brown Act (Cal. Gov. Code Section 54957.9) to deal with disruption of meetings. The Brown Act provides:

a. If the "meeting is willfully interrupted by a group or groups of persons so as to render the orderly conduct of such meeting unfeasible", the chair may ask for the assistance of the Sheriff's Department in removing the persons engaged in the willful interruption.

b. If "order cannot be restored by the removal of persons who are willfully disrupting the meeting", the public body, by motion and majority vote, may order the meeting room cleared and continue the meeting in conformity with the Brown Act (representatives of news media, except those participating in the disturbance, shall be allowed to attend, and the public body may establish a procedure for readmitting individuals not responsible for willfully disturbing the orderly conduct of the meeting).

4. Questions.

Questions about this policy shall be directed to the Deputy City Attorney assigned to advise the Board or Commission.

SEAL OF THE CITY AND COUNTY OF SAN FRANCISCO

SAN FRANCISCO COMMISION ON THE ENVIRONMENT

BYLAWS

As Amended Through September 27, 2005

Article I – Identification

Article II – Mission Statement

Article III – Commission on the Environment

Article IV – Officers

Article V – Commission Staff

Article VI – Meetings of the Commission

Article VII - Committees

Article VIII – Requests for Notice and Agendas – Voting

Article IX – Parliamentary Procedures

Article X – Code of Ethics

Article XI – Amendment of Bylaws

COMMISSION ON THE ENVIRONMENT
BYLAWS

Article I - Identification

Section 1: Name

The Commission on the Environment.

Section 2: Office

The Commission on the Environment shall be located at 11 Grove Street, San Francisco, California, 94102, or such other address where the Commission may be located from time to time. The telephone number for the Commission is (415) 355-3709.

Section 3: Compliance with Applicable Laws

The Commission shall comply with all applicable laws, including but not limited to the Ralph M. Brown Act (Cal. Government Code Section 54950 *et seq.*), the Political Reform Act of 1974 (Cal. Government Code Section 81000 *et seq.*), the San Francisco Charter, the San Francisco Sunshine Ordinance (San Francisco Administrative Code Section 67.1 *et seq.*), the Compensated Advocacy and Officeholder Accounts initiative (San Francisco Administrative Code App. 11); and the Improper Government Activities Ordinance, San Francisco Administrative Code Section 16.400 *et seq*.

Article II - Mission Statement

Section 1: The Commission on the Environment

The mission of the Commission on the Environment is to improve, enhance, and preserve the environment; and to promote San Francisco's long-term environmental sustainability as laid out in Section 4.118 of the City Charter.

Article III - Commission on the Environment

Section 1: Number

The Commission on the Environment shall consist of seven members appointed by the Mayor, pursuant to Section 4.118 of the City Charter.

Section 2: Term of Appointment

The term of each commissioner shall be four years, unless removed by the Mayor, at his or her discretion.

Section 3: Compensation

Commissioners shall serve without compensation.

Section 4: Oath of Public Office

Acceptance of the Oath of Public Office constitutes the Commission's sworn responsibility to the public trust. Members are required to serve well and to faithfully discharge their duties and responsibilities diligently and in a manner consistent with the laws of the City and County of San Francisco, and all applicable state and federal laws.

Section 5: Function

The Commission on the Environment shall be responsible for the development and success of an overall sustainability strategy for the City of San Francisco. It shall have responsibility for the development of environmental policies, strategies, practices and programs for the Department of the Environment in San Francisco. Consistent with Section 4.118 of the City Charter, the Commission shall advise other city agencies and work with them to reduce negative impacts on the environment in areas of their jurisdiction and activities and augment their efforts to communicate environmental issues to the general public.

Section 6: Duties and Responsibilities

A. The Commission on the Environment shall:

(1) Establish policies and directives for the Department of the Environment;

(2) Nominate qualified candidates for the position of Director of the Department of the Environment for appointment by the Mayor and evaluate the performance of the Director at least once a year;

(3) Conduct public education and outreach to the community on environmental issues;

(4) Have the authority to review and make recommendations on any policy proposed for adoption by any City agency regarding conformity with the long-term plans for environmental sustainability, except for those regarding building and land use;

(5) Have the authority to investigate and make recommendations to all City agencies related to operations and functions, such as solid waste management, recycling, energy conservation, natural resource conservation, environmental inspections, toxics, urban forestry and natural resources, habitat restoration and hazardous materials; and

(6) Review and approve the Department of the Environment's budget, budget modifications or fund transfers.

B. The Department of the Environment shall:

(1) Produce and regularly update an assessment of San Francisco's environmental condition;

(2) Produce and regularly update plans for the long-term environmental sustainability of San Francisco; and

(3) Manage the environmental programs, duties and functions assigned to it pursuant to Section 4.132 of the City Charter, or by ordinance.

Section 7: Excused Absences

If a Commissioner provides prior notification of absence from Commission and Committee meetings to the President of the Commission, then such absence is considered an excused absence. If no prior notice is received by the President or Secretary of the Commission, then the minutes shall note that the absence is unexcused.

Section 8: Absence from the State

Any member of the Commission who plans to be absent from the State of California for an extended period shall notify the President of the Commission.

Article IV - Officers

Section 1: Officers

The officers of the Commission are a President and Vice-President. The President and Vice-President shall serve at the pleasure of the Commission.

Section 2: Term of Office

The term of each office shall be one year.

Section 3: Nomination and Election of Officers

A. Elections for officers shall be conducted at the regular meeting of the Commission in October of each year. At the regular Commission meeting held in September of each year, any Commissioner interested in running for office shall state publicly his or her interest and willingness to run for a specific office. Such Commissioners, and any other Commissioners nominated at the October meeting, shall be candidates for office.

B. If the office of the President is vacated before the expiration of a term, the Vice President shall serve as President until the next regular meeting. The Commission shall conduct an election for President at the next regular meeting to fill the vacancy. If the Vice President is elected as President, there shall be an election for a new Vice President at that meeting. If the office of Vice President is vacated before the expiration of a term, it shall remain vacant until the next regular meeting, at which time an election shall be held. Any Commissioners nominated at a meeting at which a special election is held shall be candidates for office.

Section 4: General Duties and Responsibilities of the President

The President shall preside at all meetings of the Commission. The President, working with the Commission Secretary and Director of the Department of the Environment, shall oversee the preparation and distribution of the agenda for all regular Commission meetings. The President shall be accountable to the Commission as a whole in setting policy and shall also perform such other duties as may be assigned by the Commission. The President (and/or his/her designee) shall serve as the liaison to the media and the other departments, agencies and commissions of the City and County of San Francisco, as necessary.

Section 5: General Duties and Responsibilities of the Vice-President

The Vice-President shall perform the duties and responsibilities that may be delegated by the President. In the absence or disability of the President, the Vice-President shall perform the duties as described above, in Section 4 of this article.

Article V - Commission Staff

Section 1: Director

The Director is appointed by the Mayor, from a list of candidates proposed for his or her consideration by the Commission. The Director serves as the chief executive and administrator of the Department of the Environment and shall have the duties and powers which are set forth in the Charter and ordinances of the City and County of San Francisco, including those duties set forth above, in Section 6(B) of Article III. The Director shall attend all meetings of the Commission. The Director shall report on all matters regarding the Department of the Environment which are of concern to the Commission.

Section 2: Commission Secretary

The staff of the Department of the Environment shall include a Commission Secretary, who is hired by the Commission. The Commission Secretary shall attend all meetings of the Commission. Under the supervision of the President, which supervision may be delegated to the Director, the Commission Secretary is responsible for the proper recording and distribution of all Commission actions, correspondence, and agendas, and ensuring that the Commission meetings are properly publicly noticed and held at locations which are accessible to persons with disabilities. The Commission Secretary shall also perform such other duties as may be assigned by the Commission and Director, including but not limited to: conducting research, assisting committee chairs and officers, making recommendations on assigned projects, answering questions from the public about Commission activities and procedures, helping Department staff prepare for presentations before the Commission, and representing the Commission and Department at public gatherings, as appropriate.

Section 3: Legal Advisor

The City Attorney, or his or her designee, shall be the legal advisor to the Commission. If the City Attorney determines in writing that he or she cannot, consistent with the Rules of Professional Conduct, provide advice sought by the Commission, the City Attorney may recommend that the Commission retain outside counsel.

Article VI – Meetings of the Commission

Section 1: Quorum

At all meetings of the full Commission, the presence of a majority of the members shall constitute a quorum for all purposes. The affirmative vote of a majority of the members shall be required for the approval of any matter, regardless of the number of vacancies on the Commission or number of members present at the meeting. Based on a membership of seven, four members constitute a quorum. Likewise, four affirmative votes are required for the approval of any matter.

Section 2: Voting and Abstention

Each member present at a Commission meeting shall vote "yes" or "no" when a question is put, unless excused from voting by a motion adopted by a majority of the members present, or unless the member has a conflict of interest which legally precludes participation in the vote. Whether a Commissioner has a conflict of interest which precludes participation in a vote is determined on a case by case basis and, to the extent possible, in consultation with a legal advisor from the City Attorney's office.

Section 3: Public Participation

The Commission shall hold meetings open to the public and encourage the participation of interested persons. Each person wishing to speak on an item before the Commission shall be permitted to be heard once for up to three minutes. Time limits shall be applied uniformly to members of the public wishing to testify. The total time for public comments may be limited by the President in a manner consistent with the San Francisco Sunshine Ordinance. Each agenda for regular meetings shall provide an opportunity for members of the public to directly address the Commission on items of interest to the public that are within the Commission's jurisdiction. The Public Comment opportunity shall appear on the agenda after "New Business"; except that, at the President's discretion, the Public Comment can be heard earlier in the agenda.

Speakers at Commission meetings are requested, but not required, to identify themselves and fill out cards placed near the public microphone. The information is used to help prepare the minutes of the meeting.

Speakers must address the Commission from the podium. The Commission will not tolerate disruptive or inappropriate conduct. The President or presiding officer shall order removed from the meeting room any person who engages in such conduct or interrupts the orderly course of the meeting.

Section 4: Audio Recordation

Each meeting of the Commission, including any closed session, shall be audio recorded.

Section 5: Meeting Minutes

Minutes shall be taken at every regular and special Commission, shall be available to the public as required by law, and shall be approved by the majority vote of the Commission.

If provided by the public commenter, written summaries of public comments that are 150 words or less will be appended to the minutes. The minutes will clearly state that such comments are public comments and do not represent the comments of the Commission, the Department, the City and County of San Francisco or any employee or agency thereof.

Section 6: Regular Meetings

Beginning November 2004 the regular Commission meetings shall be held bi-monthly on the fourth Tuesday of January, March, May, July, September and November at 5:00 p.m., except in the case of a City-recognized holiday, when the meeting shall be held on the first following Tuesday. Meetings shall be held at City Hall, 1 Dr. Carlton B. Goodlett, Jr. Place, Room 416, in the City and County of San Francisco. This information shall be posted on the Commission's website.

Section 7: Special Meetings

The President of the Commission may call special meetings to address specific matters.

Section 8: Closed Sessions

The Commission is authorized to hold closed (non-public) sessions at regular and special meetings for purposes of confidential discussions, such as the discussion of job performance, or dismissal of employees, or pending litigation. Upon consultation with a legal advisor from the City Attorney's office, and the determination that a closed session is both authorized and appropriate under the circumstances, the President of the Commission may call for a closed session. Appropriate notice shall be given of all closed sessions.

Section 9: Agenda Preparation

The agenda for meetings is prepared through the joint effort of the President, the Director of the Department of the Environment, and the Commission Secretary. The Commission Secretary shall work with the President, committee Chairs, Director and the Commission's legal advisor to develop the agenda. The agenda shall consist of items requested by the President, the Director or the Commission. The agenda shall contain form language required by law.

The agenda shall refer to explanatory public documents that have been provided to the Commissioners prior to the preparation of the agenda, and shall state that the documents are available for public inspection at the Department's office during normal office hours. Explanatory documents of one page or less shall be posted with the agenda.

Section 10: Mailing and Posting of Agendas for Regular and Special Meetings of the Commission

Notices and agendas of all regular and special Commission meetings shall be posted at the San Francisco Main Library Government Information Center, the meeting site, the Commission's website, the Department's office and mailed to each Commissioner and any person who files a written request for such notice with the Commission. Agendas for regular meetings shall be mailed and posted at least 72 hours before the meeting.

Section 11: Special Meeting at Alternative Location

In the case of a special meeting held at a location other than the regular Commission meeting place, notice (but not the agenda) shall be given in the manner stated in section 10 above, 15 days before the meeting. Agendas for a special meeting at an alternative location shall be given in the manner stated in section 10 above.

Section 12: Cancellation, Continuing or Rescheduling Meetings

Notice of a cancellation, continuance or rescheduling will be provided to the public as soon as reasonably possible. The notice shall be posted at the San Francisco Main Library Government information Center, at the meeting site and on the Commission's website. If time permits, notice of the meeting change shall be provided to any person who files a written request for such notice with the Commission.

Article VII - Committees

Section 1: Membership of Committees

Committee members shall be appointed by the President of the Commission for one-year terms. Each committee shall have no more than three members.

Section 2: Committee Chairs

It is the policy of the Commission on the Environment to appoint individual Commissioners to perform specific tasks or functions related to matters which are brought before the Commission for action. The President may appoint individual Commissioners to serve as Committee Chair for a specified period of time.

Section 3: Committee Meetings

Committees shall meet at regularly scheduled times and places, as established by resolution or motion of the Commission. Meeting times shall be posted on the Commission's website. Agendas of committee meetings shall be noticed in accordance with Article VI sections

(9) and (10). Committee meetings will be generally conducted in the same manner as regular Commission meetings pursuant to Article VI sections (2) (3), (7), (8) , (11), and (12).

Section 4: Committee Quorum

A majority of the members of a committee shall constitute a quorum. The affirmative vote of the majority of the members shall be required for the approval of any matter, regardless of the number of vacancies on the committee or number of members present at the meeting.

Section 5: Minutes

Minutes for committee meetings will reflect the time the meeting was called to order and adjourned, the names of members attending the meeting, the roll call vote on each action item considered at the meeting, and any other items necessary for preserving a record of the meeting. Minutes shall be approved by a majority vote of the committee.

Section 6: Standing Committees

The Commission shall have three standing committees: (1) Operations, (2) Policy, and (3) Hydrogen and Renewable Energy. Each committee shall have three members.

Section 7: Operations Committee

The Operations Committee shall meet on the third Wednesday of January, April, July, and October at 4:00 p.m. at 11 Grove Street in the City and County of San Francisco. The Operations Committee shall have general responsibility for the budget, financial planning and operations of the Department of the Environment. This Committee shall work with the Director and make recommendations to the Commission for the financial well-being and effective administration of the Department's programs and activities, including the management of environmental programs, duties, and functions which have been assigned to the Department pursuant to Section 4.118 of the City Charter or by ordinance. This Committee shall also oversee the public education and outreach to the community on environmental issues and address issues regarding the environmental well-being of the City.

Section 8: Policy Committee

The Policy Committee shall meet on the fourth Thursday of each month at 5:00 p.m. in Room 421 City Hall, 1 Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Policy Committee shall have general responsibility for and oversee the long-term planning and policy development activities of the Department of the Environment, including the Department's assessment of San Francisco's environmental conditions, the development and update of plans for the long-term environmental sustainability of San Francisco, and the review and development of recommendations on any policy proposed for adoption by any City agency regarding conformity with the long-term plans for environmental sustainability. Specifically, the Policy Committee will focus on developing a plan for San Francisco to achieve the goal of zero waste to landfill by year 2020, and will explore resource conservation opportunities in the areas of water and toxins reduction. Furthermore, the Policy

Committee shall work with the Operations Committee and the Director of the Department of the Environment, to develop recommendations regarding restructuring of environmental programs and activities among the City agencies and departments.

Section 9: Hydrogen and Renewable Energy Committee

The Hydrogen and Renewable Energy Committee shall meet on the fourth Wednesday of February, April, June, August, and October at 5:00 p.m. and the second Wednesday in December at 5:00 p.m. in Room 421, City Hall, One Dr. Carlton B. Goodlett Jr. Place in the City and County of San Francisco. The Committee will work toward a plan for 100% renewable energy for the city's electricity and transportation fuels in less than 25 years. The Committee will focus on the potential role of hydrogen (from water & renewable energy), tidal power and other innovative ideas. This information shall be posted on the Department of the Environment's website.

Section 10: Other Committees

The Commission and/or the President, at his or her discretion, may establish other committees or task forces on an ad-hoc basis to perform tasks or functions as necessary, or to address issues outside the purview of the standing committees.

Article VIII – Requests for Notice and Agendas

A request from a member of the media or public to receive notices, agendas, or agenda packets for Commission or committee meetings must be in writing and specify what the person would like to receive and whether notice by email is preferred. Such requests will be valid until the following January. In January of each year, the Commission will ask each person on the list to re-affirm their desire to stay on the list for another year through a notice on the Commission's January agenda.

Article IX - Parliamentary Procedures

At the discretion of the President of the Commission or the committee Chair, and except where the Charter or other rules provide to the contrary, meetings shall be governed by Robert's Rules of Order.

Article X - Codes of Ethics

In accepting the Oath of Office, Commissioners shall maintain the highest standards of professional and personal conduct. They shall support the mission, goals and objectives of the San Francisco's Commission on the Environment; instill in the public a sense of confidence about the Commissions' conduct and intentions; uphold all laws and regulations; refrain from using their official positions to secure special advantage or benefit for themselves or others.

In order to set the highest standards of conduct, and in order to assure public confidence in the Commission's operations, the Commission on the Environment commits itself to:

- Encouraging and promoting integrity in government by education and example;

- Being accountable for its rules of procedure and decisions, and promoting accountability of all members of the Commission and Department staff;

- Treating all Department staff, members of the public, and colleagues with courtesy, respect, objectivity, and fairness;

- Conducting all Commission business in a timely manner and in public meetings, with full disclosure of policies, procedures, and decision-making processes, except for those matters authorized under the Brown Act and the San Francisco Sunshine Ordinance to be considered in closed session; and

- Reviewing its actions, recommendations, and procedures periodically to determine whether the Commission has adhered to its Code of Ethics and mission in all respects.

Article XI - Amendment of Bylaws

These bylaws shall be reviewed as necessary and may be amended at any meeting of the Commission by a majority vote, provided such proposed amendments are circulated in writing to all Commissioners and the intent to revise the bylaws is noticed to the public at least ten (10) days prior to such meeting.

Mayor Gavin Newsom
cordially invites you to
a holiday reception
in honor of the
City and County of San Francisco's
Commissioners

on Tuesday, December 6th
at 5pm until 7pm

Rotunda
San Francisco City Hall
1 Dr. Carlton B. Goodlett Place

Please Rsvp to 554-6605

Ruby Rippey-Tourk

Amendment of the Whole
in Board
10/25/05

FILE NO. 050922 ORDINANCE NO. 249-05

[Payroll Expense Tax Exclusion for Qualified ~~Renewable~~ Clean Energy Technology Businesses.]

Ordinance amending the Payroll Expense Tax Ordinance to establish a tax exclusion for qualified ~~renewable~~ clean energy technology businesses, as specified.

Note: Additions are *single-underline italics Times New Roman*;
deletions are ~~*strikethrough italics Times New Roman*~~.
Board amendment additions are double underlined.
Board amendment deletions are ~~strikethrough normal~~.

Be it ordained by the People of the City and County of San Francisco:

Section 1. The San Francisco Business and Tax Regulations Code is hereby amended by adding Section~~s~~ 906.2 of Article 12-A (Payroll Expense Tax Ordinance), as follows:

SEC. 906.2. ~~RENEWABLE~~CLEAN *ENERGY* TECHNOLOGY *BUSINESS EXCLUSION.*

(a) Any person that employs a full-time staff of at least ten but not more than one hundred *employees* and is *engaging in a* ~~renewable~~clean *energy* technology *business* ~~within the City~~ *may exclude from the*~~ir~~ person's *payroll expense all compensation paid to, on behalf of or for the benefit of* ~~all~~ the person's *employees,* ~~of that person~~ *and all distributions by an association by way of salary to those having an ownership interest in such association, who or that perform substantially all work or render substantially all services in direct support of such person's* ~~renewable~~ clean *energy* technology efforts, ~~business~~ *subject to the conditions and limitations set forth in this Section. For purposes of this Section, outside independent contractors shall not be considered employees of the* ~~renewable~~ clean *energy* technology *business.*

(b) For purposes of this section, the terms "person," "business," "association," "~~renewable~~ clean *energy* ~~business~~technology" and "clean energy technology business" have the following meanings:

(1) The term "person" includes the combination of all subsidiaries, affiliates and other business entities related by ownership including but not limited to partnerships, joint ventures, limited liability companies, corporations and other business organizations of whatever form. Any beneficial ownership of the stock of publicly traded corporations shall not be considered for purposes of this definition.

(2) The term "business" is as defined in Section 6.2-5 of Article 6 of the San Francisco Business and Tax Regulations Code.

(3) The term "association" is as defined in Section 6.2-4 of Article 6 of the San Francisco Business and Tax Regulations Code.

(4) "Clean energy technology" *means* ~~a business that develops~~ the development, manufacture or application of scientific advances that produce or contribute to the production of ~~renewable~~clean *energy* ~~sources~~ ~~including~~ utilizing~~electrical~~ *energy produced by wind, solar energy,* ~~hydropower~~*, landfill gas,* ~~waste-to-energy~~*, geothermal resources, ocean thermal energy conversion,* quantifiable energy conservation measures, tidal energy, *wave energy, biomass,* ~~including municipal solid waste,~~ *biofuels, or* ~~fuels derived from organic sources~~, *hydrogen fuels derived from renewable* ~~energy.~~sources. ~~or fuel cells where the fuel is derived from renewable sources.~~ Clean *energy* technology ~~also means~~ ~~a business that produces electrical energy savings brought about by the use of solar and heat pump water heating, seawater air-conditioning district cooling systems, solar air-conditioning and ice storage, quantifiable energy conservation measures, use of rejected heat from co-generation and combined heat and power systems excluding fossil-fueled qualifying facilities that sell electricity to electric utility companies.~~ does not include: ~~*(1)*~~ (A) the installation of clean energy technologies, ~~*(2)*~~(B) any fossil fuel based energy production, including but not limited to, clean coal, clean diesel, natural gas and hydrogen from natural gas, ~~*(3)*~~(C) any nuclear based

energy production, ~~*(4)*~~(D) waste to energy via combustion or incineration, or ~~*(5)*~~(E) other technologies that are detrimental to human health. The Board of Supervisors may amend this legislation to include future technologies.

(5) "Clean energy technology business" means a business in which at least seventy five percent of all business activities carried on during the tax year are directly related to clean energy technology.

(c) In order to be eligible for the payroll expense tax exclusion authorized under this Section, persons wishing to claim the exclusion must:

(1) Complete and submit an initial application to the Director of the Department of the Environment for review and evaluation.

(2) After approval, file an annual affidavit with the Department of the Environment affirming that they continue to meet the eligibility criteria set forth in regulations adopted by the Department of the Environment. The affidavit must be filed with the Department of the Environment on or before January 31 of every year after the year the application is first approved.

(3) Maintain a reasonable method of documentation that can be reviewed or verified objectively that tracks how employees whose compensation qualifies for the payroll expense tax exclusion spend their time at work, and provide such documentation to the Tax Collector upon request.

(4) File an annual Payroll Expense Tax Return with the Tax Collector regardless of the amount of tax liability shown on the return after claiming the exclusion provided for in this Section.

(d) The Director of the Department of the Environment shall:

(1) No later than the effective date of this ordinance, after a public hearing, adopt rules, regulations and forms regarding eligibility and the application process for the payroll tax expense exclusion. The Director of the Department of the Environment may amend such rules, regulations and forms from time to time as necessary.

(2) Review all applications for completeness and if an application is approved issue a certificate of eligibility to the applicant. The Director's decision on the application shall be final.

(3) Provide the Tax Collector with a list of persons eligible to claim the tax exclusion authorized under this Section for the preceding tax year by March 1 of each year. The Tax Collector shall grant or deny the tax exclusion on the basis of the Department of the Environment's determination along with the review, at the Tax Collector's option, of the documentation maintained by the employer under Subsection (c)(3) of this Section.

~~(c)~~*(e) The* ~~renewable~~ clean *energy* technology *exclusion authorized under this Section shall be available to and may be taken by* ~~each~~ a *person* for each tax year that person holds a valid certificate of eligibility ~~engaging in the renewable energy business in the City~~ *for a period of ten years from the effective date of this Section or the commencement of the person's* ~~renewable~~clean *energy* technology *business in the City, whichever is later. The date the Tax Collector* first *received the person's application for a business registration certificate for the person's* ~~renewable~~clean *energy* technology *business shall be presumed to be the date of commencement of such business unless the person establishes a different commencement date to the satisfaction of the Tax Collector.*

~~(d)~~*(f) The* ~~renewable~~ clean *energy* technology *exclusion authorized under this Section shall expire on the fifteenth anniversary date of the effective date of this Section. A person may not use or claim any unused portion of the ten year* clean *energy* technology *exclusion after the expiration date of this Section. Unless exempted under Sections 906 of this Article, every person engaging in* ~~the~~ a

~~renewable~~ clean *energy* technology *business in the City shall pay the tax imposed under this Article on the full amount of the person's payroll expense attributable to the City from and after the expiration of this Section.*

~~(e)~~(g) *If a person's calculated liability for the Payroll Expense Tax does not exceed $2,500 for the tax year after applying the* ~~renewable~~clean *energy* technology *exclusion under this Section, the person shall be exempt from payment of the Payroll Expense Tax for that tax year as provided in Section 905-A.*

(h) The effective date of this ordinance shall be January 1, 2006.

(i) The Tax Collector shall submit an annual report to the Board of Supervisors for each year for which the clean energy technology exclusion authorized under this Section is available that sets forth aggregate information on the dollar value of the clean energy technology exclusions taken each year, the number of businesses taking the exclusion, the change in the number of clean energy technology businesses engaging in business in the City, and any identifiable increase or decrease in the number of jobs in the clean energy technology business sector compared to the number of jobs in the clean energy technology business sector for the immediately preceding calendar year.

(j) The Assessor-Recorder shall submit an annual report to the Board of Supervisors for each year for which the clean energy technology exclusion authorized under this Section is available that sets forth any identifiable increases in property taxes resulting from clean energy technology businesses location, relocation or expansion to or within the City.

(k) The Controller, after ~~five~~ three years from the enactment of this Ordinance, shall perform an assessment and review of the effect of the clean energy technology tax exclusion. Based on such assessment and review the Controller shall prepare and submit an analysis to the Board of Supervisors. The analysis shall be based on criteria deemed relevant by the Controller, and may include but is not limited to, data contained in the annual reports to the Board of Supervisors as required by subsections (i) and (j) of Section 1.

(l) A misrepresentation or misstatement by any person regarding eligibility for the clean energy technology payroll expense tax exclusion authorized by this section that results in the underpayment or underreporting of the payroll expense tax shall be subject to penalties as provided in Section 6.17-2 of Article 6 of the San Francisco Business and Tax Administrative Code.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: Carol A Boardman
Carol A. Boardman
Deputy City Attorney

City and County of San Francisco
Tails
Ordinance

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 050922 **Date Passed:**

Ordinance amending the Payroll Expense Tax Ordinance to establish a tax exclusion for qualified clean energy technology businesses, as specified.

October 11, 2005 Board of Supervisors — CONTINUED

Ayes: 8 - Ammiano, Dufty, Elsbernd, Ma, Maxwell, McGoldrick, Mirkarimi, Sandoval
Noes: 2 - Daly, Peskin
Excused: 1 - Alioto-Pier

October 25, 2005 Board of Supervisors — AMENDED, AN AMENDMENT OF THE WHOLE BEARING NEW TITLE

Ayes: 11 - Alioto-Pier, Ammiano, Daly, Dufty, Elsbernd, Ma, Maxwell, McGoldrick, Mirkarimi, Peskin, Sandoval

October 25, 2005 Board of Supervisors — PASSED ON FIRST READING AS AMENDED

Ayes: 11 - Alioto-Pier, Ammiano, Daly, Dufty, Elsbernd, Ma, Maxwell, McGoldrick, Mirkarimi, Peskin, Sandoval

November 1, 2005 Board of Supervisors — FINALLY PASSED

Ayes: 9 - Alioto-Pier, Ammiano, Dufty, Elsbernd, Ma, Maxwell, McGoldrick, Mirkarimi, Sandoval
Noes: 2 - Daly, Peskin

File No. 050922

I hereby certify that the foregoing Ordinance was FINALLY PASSED on November 1, 2005 by the Board of Supervisors of the City and County of San Francisco.

Gloria L. Young
Clerk of the Board

NOV 1 0 2005

Date Approved

Mayor Gavin Newsom

File No. 050922

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO COMMISSION ON THE ENVIRONMENT SPECIAL RESCHEDULED MEETING DRAFT MINUTES

Monday, December 5, 2005, 5:30 P.M.
City Hall, Room 408
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

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The Tuesday, November 22, 2005, 5:00 p.m. meeting was rescheduled to Monday, December 5, 2005 at 5:30 p.m.

COMMISSION MEMBERS: Commissioners Nia Crowder (President); Paul Pelosi Jr. (Vice President); Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

   The meeting was called to order at 5:35 p.m. Present: Commissioners Crowder, Pelosi Jr., Desser, Mok, Rodriguez (joined the meeting at 5:45 p.m.) and Wald. Excused: Commissioner King.

2. **ACTION:** Adoption of Minutes of the September 27, 2005 Regular Meeting (Explanatory Document: Draft Minutes of the September 27, 2005 Regular Meeting (Word))** http://sfgov.org/site/sfenvironment_page.asp?id=34892.

   Upon motion by Commissioner Pelosi Jr. and second by Commissioner Desser the September 27, 2005 Minutes were unanimously adopted (Absent: Commissioners King and Rodriguez). There was no public comment at this time.

Department of the Environment, City and County of San Francisco
11 Grove Street, San Francisco, CA 94102
Telephone: (415) 355-3700 • Fax: (415) 554-6393
Email: Monica.Fish@sfgov.org • www.sfenvironment.com

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3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. There was no public comment at this time.

4. **INFORMATIONAL PRESENTATION:** Overview of Mayor's Greening Initiative (Explanatory Documents: Presentation to the Commission on the Environment 12.05.05 (Powerpoint)** http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/sfe120505CleanGreen.ppt and Better Streets Policy Ordinance (PDF) (received in Commission Meeting)) http://web.sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/BetterStreetsPolicyOrdRecInMtg(1).pdf

SPONSOR: Commissioner Nia Crowder
SPEAKER: Marshall Foster, Director of Greening, Mayor's Office

Mr. Foster presented an informational overview of the "Clean and Green Initiative" discussing programs and possible partnerships with the Department of the Environment and other City departments. Topics discussed included:

- Overall Goals;
- How the "Clean and Green Initiative" aligns with the Urban Environmental Accords in reference to Urban Design, Urban Nature, Environmental Health and Water goals;
- Clean and Green Coordinated Planning and Policy—"Top-Down" philosophy as to what City departments can achieve by capital funding, grants, standards reform, maintenance planning and technical assistance and "Bottom-Up" philosophy--what the community can achieve by community ownership, volunteer efforts, enhanced maintenance, performance, and monitoring;
- The Better Streets Policy Ordinance that would set new policy direction for City departments, the Director's working group, capital investment, and standards reform;
- Community-Based Greening Initiatives consisting of community challenge grants, street-parks, and neighborhood greenways;
- Green Buildings and Urban Design—Expanding support and implementation of the Municipal Green Building Ordinance, developing green-building investment programs, private sector green-building incentives, and elevating architecture and urban design.

Mr. Foster stated that he would be presenting the Better Streets Policy to City Commissions, to the Board of Supervisors Committee in January, and then to the full Board. An interdepartmental working group is looking at standards for making specific implementation proposals.

Commissioner Rodriguez asked for a breakdown by neighborhood streets and major thoroughfares of the Better Streets Program 11 million capital investments. Mr. Foster responded that 1.33 million and 1.25 million are designated for Van Ness and 19th Avenues major thoroughfares, and the remaining amount would be distributed by specific projects.

Public Comment: Mr. John Plummer, Friends of Lake Merced recommended that better management of storm and waste-water be a higher priority and encouraged the Commission to become involved in City water-management programs, enforcement of purple-pipe ordinances, and extension of ordinances that permit local processing of water.

Public Comment: Ms. Ruth Gravanis, Alliance for a Clean Waterfront requested that storm water management be a higher priority and to involve the San Francisco Public Utilities Commission (SFPUC) in the process, especially with regard to the wastewater Master Plan process. Ms. Gravanis recommended (1) replacing impermeable with permeable pavement for greening projects, (2) incorporating ways to keep storm water out of systems, (3) using sand filters underneath recreational fields in parks and playgrounds, and (4) incorporating the use of green roofs.

Mr. Foster stated that design standards would be formed to include storm water management. City departments such as the Public Utilities Commission, Department of Public Works, and Planning Department have been brought into the effort to discuss rules and fundamental reform as it relates to permeable vs. impermeable pavement and other related issues.

Commissioner Desser recommended (1) multitasking improvement efforts with street improvement and other projects, and (2) for Mr. Foster to contact Mr. Andy Lipkis of Tree People on funding strategies.

Public Comment: Mr. Alex Lansburg, Alliance for a Clean Waterfront and representative on the Public Utilities Citizens Advisory Committee (1) inquired about future funding to implement the Initiative, (2) recommended looking to PUC wastewater and recycled water management programs for funding, and (3) recommended reviewing the program from a regulatory and funding perspective.

5. **INFORMATIONAL PRESENTATION and ACTION:** San Francisco Green Schoolyard Alliance: A Garden in Every School. The Commission considered and voted on Resolution File No. R-2005-06-COE urging the Mayor's Office to work with San Francisco Green Schoolyard Alliance (SFGSA) and San Francisco Unified School District (SFUSD) to create a garden in every school (Explanatory Documents: Resolution File No. R-2005-06-COE (PDF) http://www.sfenvironment.com/aboutus/policy/resolution/005-06.pdf and The San Francisco Green Schoolyard Alliance http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/TheSanFranciscoGreenSchoolyardAlliance.pdf
.

SPONSOR: Commissioner Arlene Rodriguez
SPEAKERS: Becky Wike, Staff, Department of the Environment
Nan McGuire, Chair of SFGSA and
Arden Bucklin-Sporer, Director, Educational Gardens, SFUSD

Ms. Becky Wike introduced "A Garden in Every School" program. Ms. Wike stated that the Department has been members of the San Francisco Green Schoolyard Alliance for the past three years, and she has served on the Steering Committee working with organizations and individuals that are interested in greening schoolyards. The Commission viewed SFGSA's video on "Gray to Green Transforming San Francisco's Schoolyards."

Ms. Arden Bucklin-Sporer described her position with SFUSD working with school districts to link private money with public-school gardens, providing resources-information, grant opportunities, and technical expertise on how to develop a school garden program in addition to ensuring that gardens remain sustainable. Ms. Sporer spoke in support of the Green Schoolyard Program and discussed challenges to the program.

Ms. Nan McGuire described the work of SFGSA, a coalition of Bay Area civic organizations whose work supports schoolyard transformations from asphalt yards into green spaces for learning and play and discussed (1) fundraising for the schoolyard greening program and garden educators; (2) implementing the greening component of San Francisco's 2003 Proposition A school bond funding in seventeen elementary schools; and (3) requesting funding and support from the Mayor's Office.

Director Blumenfeld asked how the Department and Commission could work to support the removal of tarmac from schoolyards.

Public Comment: Mr. John Bitoff, Executive Director of Maintenance and Operations, SFUSD, voiced his strong support of the program and its positive psychological effects. Mr. Bitoff advised that his department does not have the ability to remove asphalt from schoolyards and asked for support in this effort.

Commissioner Desser (1) recommended there be mechanisms for contributions and that MUNI placards show pictures of the gardens and children working in the gardens, and (2) asked if there was a tour program of the gardens.

Ms. McGuire stated that SFGSA will start to implement recommendations and asked Director Blumenfeld to work with the Mayor's office to help support SFGSA and the school garden program.

Commissioners Wald and Rodriguez recommended that SFGSA schedule a meeting with the Policy Committee to develop a list of specific requests to present to the Mayor.

Public Comment: Ms. Nancy Wuerfel, discussed a neighborhood group called "Parkside for Kids" that succeeded in replacing a proposed 60-car garage and four-story teacher housing with green space and basketball courts at Diane Feinstein Elementary School.

Public Comment: Ms. Ruth Gravanis spoke in support of SFGSA and removing as much asphalt and concrete from schoolyards as possible, but recommended consulting the children, as hard surface and lawn are needed for other activities. Ms. Gravanis recommended consulting Mr. Lipkis of Tree People to help design schoolyards that incorporate water management successfully.

Upon Motion by Commissioner Rodriguez and second by Commissioner Wald, Resolution File No. R-2005-06-COE was approved by the following vote:

VOTE:	Approved (6-0) (Absent: 1)
AYES:	Commissioners Crowder, Pelosi Jr., Desser, Mok, Rodriguez and Wald
NOES:	None
ABSENT:	Commissioner King

6. **INFORMATIONAL PRESENTATION and ACTION:** Five-year Impound Account, Budget and Plan. The Commission considered and voted on approving the Five-year Impound Account, Budget and Plan (Explanatory Document: Five Year Impound Plan (PDF)). http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/ImpoundAcctRateProcessFY06-11.pdf

SPONSOR: Commissioner Arlene Rodriguez
SPEAKER: David Assmann, Deputy Director

Deputy Director Assmann described the proposed Five-year Impound Account, Budget and Plan that funds program activities conducted by the Department that relate to the production and management of San Francisco's waste stream that includes recycling, hazardous waste reductions, other solid waste related programs and programs that mitigate impact on neighborhoods effected by the solid waste infrastructure. Explanatory documents include a three-page explanatory memo, annual budget for each of the five years, and a detailed list of the projects by fiscal year divided by residential and commercial projects.

Public Comment: Ms. Nancy Wuerfel voiced her objection to the $35 million San Francisco Environment budget proposal as she stated it represents a 25% increase in expense beyond the $28 million five-year budget that was approved for solid waste management in 2001. Ms. Wuerfel stated that the budget detail was not available until the day of the meeting and requested that the Commissioners spend more time reviewing the details before voting. A Public Comment document on "Programs and Incentives" was received at the Commission Meeting http://web.sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/PublicCommentReceivedinCommissionMtg(1).pdf.

Deputy Director Assmann responded that the budget overview was presented at the October 17 Special Operations Committee Meeting, but is the first time the entire list of projects has been published. Mr. Assmann stated that the budget amount has been public for some time and represents only a 2% increase over the past three years, a 4% increase for the subsequent fiscal years, and is in line with inflationary expenses. Commissioner Pelosi Jr. asked to describe the one-year process. Deputy Director Assmann described the rate process, public hearings, and budget approval process by the Board of Supervisors and the Mayor.

Upon Motion by Commissioner Rodriguez and second by Commissioner Mok, the Five-year Impound Account, Budget and Plan was approved by the following vote:

VOTE: Approved (4-0) (3 Absent)

AYES: Commissioners Crowder, Pelosi Jr., Mok and Rodriguez

NOES: None

ABSENT: Commissioners Desser, King and Wald

7. **DISCUSSION and ACTION**: Nomination and Election of Officers. At the September 27, 2005 Commission meeting, Commissioner Nia Crowder expressed interest in the office of President and Commissioner Pelosi Jr. expressed interest in the office of Vice-President

Commissioner Pelosi Jr. nominated Commissioner Nia Crowder for the office of President and Commissioner Nia Crowder nominated Commissioner Pelosi Jr. for the office of Vice-President.

VOTE: Approved (4-0) (3 Absent) Commissioner Nia Crowder elected President and Commissioner Pelosi Jr. elected Vice-President.

AYES: Commissioners Pelosi Jr., Mok, Rodriguez, and Crowder

NOES: None

ABSENT: Commissioners Desser, King, and Wald

8. **INFORMATION:** Commission Secretary's Report
http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/CommissionSecretaryReport120505.pdf

Monica Fish, Commission Secretary

- Communications and Correspondence: The Commission Secretary's report included:

  1. Commission on the Environment Meeting Schedule for 2006 and proposed schedule change for the Policy Committee. Commissioner Rodriguez advised that the Policy Committee members have selected the second Monday of each month for the meeting. A bylaws change would be noticed and voted on at the January 24, 2006 Commission meeting;
  2. "Policy on Discriminatory or Harassing Remarks Made at Public Meetings of City Boards and Commissions" was distributed in the meeting packet for the Commissioners' review;
  3. "Commission on the Environment Bylaws as Amended Through September 27, 2005" that includes the adopted new meeting date for the Hydrogen and Renewable Energy Committee meetings was distributed in the meeting packet for the Commissioners' reference;
  4. Mayor's Holiday Reception Invitation to Commission Members was announced and previously emailed to Commissioners.

- Update on Pending City Legislation

  A copy of the Board of Supervisors File No. 050922, Ordinance No. 249-05 approved on November 10, 2005 for Payroll Expense Tax Exclusion for Qualified Clean Energy Technology Businesses was included in the Commission packet.

9. **INFORMATION:** Hydrogen and Renewable Energy Committee Report

Commissioner Crowder reviewed the agenda for the December 14, 2005 Meeting to be held at City Hall, Room 421 at 5:00 p.m. The main agenda topics proposed for the meeting: (1) an informational presentation on solar heating and photovoltaic programs, (2) update on Propositions B and H from 2001, and (3) preliminary report on the usage of the hydrogen fueling trailers.

10. INFORMATION: Operations Committee Report

Chair's Report: Commissioner Rodriguez highlighted the October 17, 2005 Special Rescheduled Meeting. Topics that were discussed included review of the budget and the Environmental Justice program Requests for Proposals for grants that are moving forward in the Bayview and Potrero Hill neighborhoods. The January 18, 2006 scheduled meeting would include a discussion on the draft budget for the next fiscal year and a review of one of the department's programs.

11. INFORMATION: Policy Committee Report

Chairs Report: Commissioner Wald was absent for this item. Commissioner Rodriguez highlighted the November 9, 2005 Special Rescheduled Meeting and advised that an informational presentation was given by Transbay Cable LLC on a proposal to install an electricity transmission line beneath the bay between San Francisco and Pittsburg.

The next Policy Committee meeting was rescheduled from January 26, 2006 to January 11 as of this meeting date but subsequently rescheduled to January 9, 2006 at 5:00 p.m., Room 421, City Hall. Agenda items include a public hearing to receive public comment on what the priorities for the Urban Accords should be for the first year and a discussion on the programmatic and legislative schedule for the Policy Committee one-year calendar for 2006.

Public Comment: Ms. Ruth Gravanis stated that at previous meetings it was suggested that the Policy Committee meet on (1) the proposed west span bike pedestrian maintenance path to be brought to the full Commission for full endorsement and (2) a possible joint hearing between the Policy Committee and the Treasure Island Development Authority on sustainability of Treasure Island.

Commissioner Crowder advised that the Commission was considering a joint hearing with the Treasure Island Development Authority at a future date.

12. INFORMATION: Director's Report

Jared Blumenfeld, Director, Department of the Environment gave updates on San Francisco Environment administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division as explained in the Director's Report dated December 1, 2005 http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/DirectorsReportDecember2005(1).doc.

13. **INFORMATION:** New Business: President Crowder discussed the agenda for the January 24, 2006 Commission meeting. Proposed topics include year-end reports and the green business certification process.

14. **FUTURE AGENDA ITEMS:** Future agenda items were discussed under New Business.

15. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

    Public Comment: Ms. Nancy Wuerfel inquired as to the source of the $25 million renovation amount for the Department's move to 25 Van Ness Avenue. Director Blumenfeld advised that the Department is going to have a capital campaign and the fiscal agent would be determined.

16. **ADJOURNMENT:** The meeting adjourned at 7:35 p.m.

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506; (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org.*

The next meeting of the Commission on the Environment will be held on Tuesday, January 24, 2006 at 5:00 p.m., City Hall, Room 416.

SF Environment
Our home. Our city. Our planet.

GAVIN NEWSOM
Mayor

JARED BLUMENFELD
Director

CITY AND COUNTY OF SAN FRANCISCO
COMMISSION ON THE ENVIRONMENT
SPECIAL RESCHEDULED MEETING
APPROVED MINUTES

Monday, December 5, 2005, 5:30 P.M.
City Hall, Room 408
One Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

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The Tuesday, November 22, 2005, 5:00 p.m. meeting was rescheduled to Monday, December 5, 2005 at 5:30 p.m.

COMMISSION MEMBERS: Commissioners Nia Crowder (President); Paul Pelosi Jr. (Vice President); Christina Desser, Angelo King, Alan Mok, Arlene Rodriguez, and Johanna Wald

Commission Secretary: Monica Fish

ORDER OF BUSINESS

Public comment will be taken before the Commission takes action on any item.

1. **CALL TO ORDER AND ROLL CALL**

   The meeting was called to order at 5:35 p.m. Present: Commissioners Crowder, Pelosi Jr., Desser, Mok, Rodriguez (joined the meeting at 5:45 p.m.) and Wald. Excused: Commissioner King.

2. **ACTION:** Adoption of Minutes of the September 27, 2005 Regular Meeting (Explanatory Document: Draft Minutes of the September 27, 2005 Regular Meeting (Word))** http://sfgov.org/site/sfenvironment_page.asp?id=34892.

   Upon motion by Commissioner Pelosi Jr. and second by Commissioner Desser the September 27, 2005 Minutes were unanimously adopted (Absent: Commissioners King and Rodriguez). There was no public comment at this time.

3. **PUBLIC COMMENTS**: Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda. There was no public comment at this time.

4. **INFORMATIONAL PRESENTATION:** Overview of Mayor's Greening Initiative (Explanatory Documents: Presentation to the Commission on the Environment 12.05.05 (Powerpoint)** http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/sfe120505CleanGreen.ppt and Better Streets Policy Ordinance (PDF) (received in Commission Meeting)) http://web.sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/BetterStreetsPolicyOrdRecInMtg(1).pdf

SPONSOR: Commissioner Nia Crowder
SPEAKER: Marshall Foster, Director of Greening, Mayor's Office

Mr. Foster presented an informational overview of the "Clean and Green Initiative" discussing programs and possible partnerships with the Department of the Environment and other City departments. Topics discussed included:

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Public Comment: Ms. Ruth Gravanis, Alliance for a Clean Waterfront requested that storm water management be a higher priority and to involve the San Francisco Public Utilities Commission (SFPUC) in the process, especially with regard to the wastewater Master Plan process. Ms. Gravanis recommended (1) replacing impermeable with permeable pavement for greening projects, (2) incorporating ways to keep storm water out of systems, (3) using sand filters underneath recreational fields in parks and playgrounds, and (4) incorporating the use of green roofs.

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SPONSOR: Commissioner Arlene Rodriguez
SPEAKERS: Becky Wike, Staff, Department of the Environment
Nan McGuire, Chair of SFGSA and
Arden Bucklin-Sporer, Director, Educational Gardens, SFUSD

Ms. Becky Wike introduced "A Garden in Every School" program. Ms. Wike stated that the Department has been members of the San Francisco Green Schoolyard Alliance for the past three years, and she has served on the Steering Committee working with organizations and individuals that are interested in greening schoolyards. The Commission viewed SFGSA's video on "Gray to Green Transforming San Francisco's Schoolyards."

Ms. Arden Bucklin-Sporer described her position with SFUSD working with school districts to link private money with public-school gardens, providing resources-information, grant opportunities, and technical expertise on how to develop a school garden program in addition to ensuring that gardens remain sustainable. Ms. Sporer spoke in support of the Green Schoolyard Program and discussed challenges to the program.

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Public Comment: Ms. Ruth Gravanis spoke in support of SFGSA and removing as much asphalt and concrete from schoolyards as possible, but recommended consulting the children, as hard surface and lawn are needed for other activities. Ms. Gravanis recommended consulting Mr. Lipkis of Tree People to help design schoolyards that incorporate water management successfully.

Upon Motion by Commissioner Rodriguez and second by Commissioner Wald, Resolution File No. R-2005-06-COE was approved by the following vote:

VOTE:	Approved (6-0) (Absent: 1)
AYES:	Commissioners Crowder, Pelosi Jr., Desser, Mok, Rodriguez and Wald
NOES:	None
ABSENT:	Commissioner King

6. **INFORMATIONAL PRESENTATION and ACTION:** Five-year Impound Account, Budget and Plan. The Commission considered and voted on approving the Five-year Impound Account, Budget and Plan (Explanatory Document: Five Year Impound Plan (PDF)). http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/ImpoundAcctRateProcessFY06-11.pdf

SPONSOR: Commissioner Arlene Rodriguez
SPEAKER: David Assmann, Deputy Director

Deputy Director Assmann described the proposed Five-year Impound Account, Budget and Plan that funds program activities conducted by the Department that relate to the production and management of San Francisco's waste stream that includes recycling, hazardous waste reductions, other solid waste related programs and programs that mitigate impact on neighborhoods effected by the solid waste infrastructure. Explanatory documents include a three-page explanatory memo, annual budget for each of the five years, and a detailed list of the projects by fiscal year divided by residential and commercial projects.

Public Comment: Ms. Nancy Wuerfel voiced her objection to the $35 million San Francisco Environment budget proposal as she stated it represents a 25% increase in expense beyond the $28 million five-year budget that was approved for solid waste management in 2001. Ms. Wuerfel stated that the budget detail was not available until the day of the meeting and requested that the Commissioners spend more time reviewing the details before voting. A Public Comment document on "Programs and Incentives" was received at the Commission Meeting http://web.sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/PublicCommentReceivedinCommissionMtg(1).pdf.

Deputy Director Assmann responded that the budget overview was presented at the October 17 Special Operations Committee Meeting, but is the first time the entire list of projects has been published. Mr. Assmann stated that the budget amount has been public for some time and represents only a 2% increase over the past three years, a 4% increase for the subsequent fiscal years, and is in line with inflationary expenses. Commissioner Pelosi Jr. asked to describe the one-year process. Deputy Director Assmann described the rate process, public hearings, and budget approval process by the Board of Supervisors and the Mayor.

Upon Motion by Commissioner Rodriguez and second by Commissioner Mok, the Five-year Impound Account, Budget and Plan was approved by the following vote:

VOTE: Approved (4-0) (3 Absent)

AYES: Commissioners Crowder, Pelosi Jr., Mok and Rodriguez

NOES: None

ABSENT: Commissioners Desser, King and Wald

7. **DISCUSSION and ACTION**: Nomination and Election of Officers. At the September 27, 2005 Commission meeting, Commissioner Nia Crowder expressed interest in the office of President and Commissioner Pelosi Jr. expressed interest in the office of Vice-President

Commissioner Pelosi Jr. nominated Commissioner Nia Crowder for the office of President and Commissioner Nia Crowder nominated Commissioner Pelosi Jr. for the office of Vice-President.

VOTE: Approved (4-0) (3 Absent) Commissioner Nia Crowder elected President and Commissioner Pelosi Jr. elected Vice-President.

AYES: Commissioners Pelosi Jr., Mok, Rodriguez, and Crowder

NOES: None

ABSENT: Commissioners Desser, King, and Wald

8. **INFORMATION:** Commission Secretary's Report
http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/CommissionSecretaryReport120505.pdf

Monica Fish, Commission Secretary

- Communications and Correspondence: The Commission Secretary's report included:

  1. Commission on the Environment Meeting Schedule for 2006 and proposed schedule change for the Policy Committee. Commissioner Rodriguez advised that the Policy Committee members have selected the second Monday of each month for the meeting. A bylaws change would be noticed and voted on at the January 24, 2006 Commission meeting;
  2. "Policy on Discriminatory or Harassing Remarks Made at Public Meetings of City Boards and Commissions" was distributed in the meeting packet for the Commissioners' review;
  3. "Commission on the Environment Bylaws as Amended Through September 27, 2005" that includes the adopted new meeting date for the Hydrogen and Renewable Energy Committee meetings was distributed in the meeting packet for the Commissioners' reference;
  4. Mayor's Holiday Reception Invitation to Commission Members was announced and previously emailed to Commissioners.

- Update on Pending City Legislation

  A copy of the Board of Supervisors File No. 050922, Ordinance No. 249-05 approved on November 10, 2005 for Payroll Expense Tax Exclusion for Qualified Clean Energy Technology Businesses was included in the Commission packet.

9. **INFORMATION:** Hydrogen and Renewable Energy Committee Report

Commissioner Crowder reviewed the agenda for the December 14, 2005 Meeting to be held at City Hall, Room 421 at 5:00 p.m. The main agenda topics proposed for the meeting: (1) an informational presentation on solar heating and photovoltaic programs, (2) update on Propositions B and H from 2001, and (3) preliminary report on the usage of the hydrogen fueling trailers.

10. INFORMATION: Operations Committee Report

Chair's Report: Commissioner Rodriguez highlighted the October 17, 2005 Special Rescheduled Meeting. Topics that were discussed included review of the budget and the Environmental Justice program Requests for Proposals for grants that are moving forward in the Bayview and Potrero Hill neighborhoods. The January 18, 2006 scheduled meeting would include a discussion on the draft budget for the next fiscal year and a review of one of the department's programs.

11. INFORMATION: Policy Committee Report

Chairs Report: Commissioner Wald was absent for this item. Commissioner Rodriguez highlighted the November 9, 2005 Special Rescheduled Meeting and advised that an informational presentation was given by Transbay Cable LLC on a proposal to install an electricity transmission line beneath the bay between San Francisco and Pittsburg.

The next Policy Committee meeting was rescheduled from January 26, 2006 to January 11 as of this meeting date but subsequently rescheduled to January 9, 2006 at 5:00 p.m., Room 421, City Hall. Agenda items include a public hearing to receive public comment on what the priorities for the Urban Accords should be for the first year and a discussion on the programmatic and legislative schedule for the Policy Committee one-year calendar for 2006.

Public Comment: Ms. Ruth Gravanis stated that at previous meetings it was suggested that the Policy Committee meet on (1) the proposed west span bike pedestrian maintenance path to be brought to the full Commission for full endorsement and (2) a possible joint hearing between the Policy Committee and the Treasure Island Development Authority on sustainability of Treasure Island.

Commissioner Crowder advised that the Commission was considering a joint hearing with the Treasure Island Development Authority at a future date.

12. INFORMATION: Director's Report

Jared Blumenfeld, Director, Department of the Environment gave updates on San Francisco Environment administrative and programmatic operations relating to Budget Planning, Strategic Planning, Climate Division, Outreach and Education Division, Environmental Justice Division, Zero Waste, Toxics Reduction Program, and the Urban Forestry Division as explained in the Director's Report dated December 1, 2005 http://sfgov.org/site/uploadedfiles/sfenvironment/meetings/coe/supporting/2005/DirectorsReportDecember2005(1).doc.

13. **INFORMATION:** New Business: President Crowder discussed the agenda for the January 24, 2006 Commission meeting. Proposed topics include year-end reports and the green business certification process.

14. **FUTURE AGENDA ITEMS:** Future agenda items were discussed under New Business.

15. **PUBLIC COMMENTS:** Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

    Public Comment: Ms. Nancy Wuerfel inquired as to the source of the $1 million renovation amount for the Department's move to 25 Van Ness Avenue. Director Blumenfeld advised that the Department is going to have a capital campaign and the fiscal agent would be determined.

16. **ADJOURNMENT:** The meeting adjourned at 7:35 p.m.

Monica Fish, Commission Secretary
TEL: (415) 355-3709
FAX: (415) 554-6393

*** Copies of explanatory documents are available at (1) the Commission's office, 11 Grove Street, San Francisco, California between the hours of 9 a.m. and 5 p.m., (2) on the Commission's website at http://sfgov.org/site/sfenvironment_meeting.asp?id=15506; (3) upon request to the Commission Secretary, at telephone number 415-355-3709, or (4) via e-mail at Monica.Fish@sfgov.org.*

The next meeting of the Commission on the Environment will be held on Tuesday, January 24, 2006 at 5:00 p.m., City Hall, Room 416.

Adopted: January 24, 2006

[A Garden in Every School]

Resolution urging the Mayor's Office to work with San Francisco Green Schoolyard Alliance (SFGSA) and San Francisco Unified School District to create a garden in every school.

WHEREAS, School gardens can enhance student learning in math, science, social studies, reading, writing, and nutrition[1]; and,

WHEREAS, Many school sites—with paved yards, fences, and block-like buildings—are unwelcoming and uninteresting play areas; and,

WHEREAS, Research shows that employing the environment as an integrating context for learning in K-12 education increases performance on standardized measures of academic achievement[2]; and,

WHEREAS, Students in outdoor classrooms exhibit improved behavior and interpersonal relationships [3]; and,

WHEREAS, In urban areas, well-designed school gardens may provide a child's most formative, sometimes only, experience with the natural environment; and,

WHEREAS, School gardens provide students the opportunity for hands-on, inquiry based learning, which is essential to model environmental

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[1] Gaining Ground: The Power and Potential of School Ground Greening in the Toronto District School Board, Evergreen, [http://www.evergreen.ca/en/lg/gaining_ground.pdf]

[2] Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning, State Education and Environmental Roundtable, [http://www.seer.org/extras/execsum.pdf]

[3] Gaining Ground: The Power and Potential of School Ground Greening in the Toronto District School Board. Evergreen, [http://www.evergreen.ca/en/lg/gaining_ground.pdf]

stewardship and provide the skills and reinforcement that will bridge the gap between environmental knowledge and action[4]; and,

WHEREAS, Research demonstrates that when kids garden their attitudes towards vegetables improve, as well as their preference for healthier fruit and vegetable snacks[5]; and,

WHEREAS, School gardens help filter dust and pollutants and provide shade, thus lowering children's exposure to toxins[6]; and,

WHEREAS, The presence of trees and gardens has been linked to the extent to which residents feel satisfied with their community and where they live[7]; and,

WHEREAS, Gardens enhance school grounds and provide additional green space to communities; and,

WHEREAS, Many city departments and community groups are interested in developing and maintaining green space, including gardens, in San Francisco; and,

WHEREAS, On November 4, 2003, San Francisco voters approved Proposition A: School Bond, which allocated $2.0 million of bond proceeds to the greening of schoolyards at certain District schools [8]; and,

WHEREAS, The San Francisco Green Schoolyard Alliance (SFGSA) is a coalition of Bay Area civic organizations whose work supports schoolyard transformations from ordinary asphalt yards into ecologically rich green spaces for learning; and,

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[4] Schoolyard Learning: The Impact of School Grounds, Education Development Center, Inc., [http://www.edc.org/GLG/schoolyard.pdf]

[5] Research Support for Kid's Gardening, National Gardening Association, [http://www.kidsgardening.com/2005.kids.garden.news/research.pdf]

[6] Nature Nurtures: Investigating the Potential of School Grounds, Evergreen, [http://www.evergreen.ca/en/lg/nurtures-en.pdf]

[7] Nature Nurtures: Investigating the Potential of School Grounds, Evergreen, [http://www.evergreen.ca/en/lg/nurtures-en.pdf]

[8] Voter Information Pamphlet, Department of Elections: City & County of San Francisco, [http://sfpl4.sfpl.org/pdffiles/November4_2003.pdf]

WHEREAS, SFGSA provides technical assistance and resources to the thirty-plus schools that have schoolyard garden programs; now, therefore, be it

RESOLVED, The Commission on the Environment supports the efforts of the San Francisco Green Schoolyard Alliance and urges the Mayor's Office to work with SFGSA and the San Francisco Unified School District to create a garden in every school.

I hereby certify that this Resolution was adopted by the Commission on the Environment at its special meeting on December 5, 2005.

Monica Fish

Monica Fish, Commission Secretary

Vote: Approved (6-0) (1 Absent)

Ayes: Commissioners Crowder, Pelosi Jr., Desser, Mok, Rodriguez, and Wald

Noes: None

Absent: Commissioner King

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